Informal Transport in the Developing World

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Nairobi, 2000

HS/593/00E
ISBN 92−1−131453−4

Cover Photo: Robert Cervero

Foreword

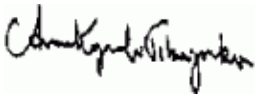
Rapid motorization and inadequate urban transport planning and management have lead to intolerable levels of traffic, congestion, air pollution and lost urban economic productivity. The growing use of largely inefficient private automobile transport in very densely populated cities to meet the increase in demand for urban transport has reduced the I efficiency and effectiveness of public transport. Falling levels of resources to subsidize these systems has led to deteriorating service and revenue deficiencies. Those urban residents unable to afford private transport have been the most negatively affected, as alternatives for travelling other ways have either completely disappeared or have become increasingly out of reach financially.

In response, the informal transport sector has burgeoned throughout cities in the both the developed and developing worlds, filling the gap of inadequate and increasingly expensive public transport. In many cases, these systems consist of non−motorized transport such as are found in Asia, or include the mini−vans (matatus) of Nairobi and Mexico City or the “Jeepneys” of Manila. While in some cases these informal systems are efficient, effective and meet real transport needs for many urban residents, in other cases they are yet to be regulated and organised thus posing a threat to road safety and the environment.

Local, regional and national transport decision−makers and managers need the knowledge, tools and techniques to more rationally plan and regulate informal transport in order to maximize its inherent economic advantage vis−a−vis existing and planned public transport. It is essential it be incorporated fully into the overall transport fabric of the city to provide a much−needed complementary role, particularly for those residents unable to afford cars. I am confident that this publication will help policy makers, managers and researchers working in the area of urban transport to further their knowledge and understanding of the dynamics of informal transport in the developing world.

We gratefully acknowledge the contributions of Dr. Robert Cervero of the University of California at Berkeley, the principal author of this publication; Dr. David Maunder of the Transport Research Laboratory, U.K.; Dr.

Yordpol Taniboriboon of the Asian Institute of Technology, Bangkok, Thailand; John Flora of the World Bank; and Brian Williams of UNCHS (Habitat) for their invaluable contributions as peer reviewers and editors of the publication.



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Preface

This study was carried out at the request of the United Nations Centre for Human Settlements (Habitat). The primary aim was to review the market, organizational, and regulatory characteristics of the informal transport sector throughout the world with an eye toward identifying promising enabling and remedial strategies. The hope also was to give greater visibility to this often ignored sector. Brian Williams was Habitat's project officer in charge of overseeing the work. I owe a great deal of gratitude to Brian for helping conceptualize the study and define the research approach, and for providing helpful suggestions throughout.

A number of other individuals also deserve recognition for their valuable assistance and input to the work. Four graduate students from the University of California at Berkeley provided research assistance. Aaron Golob assisted in compiling and translating materials on clandestine vans in Brazil. Ria Hutabarat helped with the literature reviews of informal transportation issues in Indonesia and Africa. Pitch Pongsawat compiled and translated materials for the Bangkok case. And Bambang Susantono assisted with designing, implementing, and interpreting the survey of becak and ojek operators in Jakarta. Individuals who also provided helpful suggestions along the way include Walter Hook of the Institute for Transport and Development Policy; Paul Barter of the SUSTRAN Resource Centre in Kuala Lumpur; Antti Talvitie, Tilly Chang, Josè Barbéro, John Flora, and Edward Dotson of the World Bank; and Bruce Winston and Chiaki Kuranami of Padeco Company, Ltd.

This study would not have been possible without the generosity and assistance of many individuals who gave their time in helping me carry out case–study field work. The following individuals helped with the Bangkok case. Apiwat Ratanawaraha and Sompong Sirisoponsilp of Chulalongkorn University; Chamiong Poboon of the National Institute of Development Administration; Silpachai Jarukasemratana of the Ministry of Transportation; Pichid (Joe) Uasakunkiat of the Thai Cycling Club; and John Ernst of Urban Transport Ecology. Those who helped with the Manila case study were: Hussein Lidasan, Manuel Apuan, Jun Villoria, Danielle Guillen, and Ramon Fernan of the University of the Philippines; George Esguerra of the Department of Transportation and Communications; Jejomar Binay of the Transportation Licensing Board; and Charles Melhuish of the Asian Development Bank. Providing useful information and insights on informal transport in Kingston were: Alton Fletcher of the Jamaica Urban Transit Company; John McFarland of the Jamaica Transport Authority; Dorothy Clark of the Ministry of Transportation and Public Works; and Arthur Chin, an independent franchise–holder. And of help in compiling materials on cladestine vans and motorcycle–taxis in Brazil, and in Rio de Janeiro, in particular were: Ronaldo Balassiano, João Oliviera, Jr., and many of the faculty and students of PET/COPPE at the Universidade Federal do Rio de Janeiro. To all of these individuals, I owe a great deal of gratitude.

The views expressed in this report are those of the author and not necessarily those of the sponsor or anyone else. The author alone is responsible for any errors or omissions that might be contained in this report.

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August, 2000

PART ONE: Informal transport: Definitions, Markets, and Organization

Part One provides a global portrait of informal transport services. Place–setting is its main purpose – to set a context, to define the sector in its many shapes and forms, and to raise key issues and policy concerns.

Chapter One commences with an overview of the sector, defining its major traits and addressing core policy issues that surround it. Chapter Two reviews the rich mix of services that make up the informal transport sector, defined along market characteristics of supply, demand, and performance. Problems blamed on the informal transport like traffic congestion, accidents, and environmental degradation are also examined. Chapter Three addresses various organizational, institutional, and regulatory issues surrounding informal transport services.

Chapter One: Informal Transport: A Global Overview

Plying the streets of Bangkok, Lagos, São Paulo, and other cities of the developing world are fleets of small, low–performance vehicles driven by private operators that serve low–income neighborhoods. In some places, environmental–friendly, pedal–powered modes, like the pedicabs of Manila, provide lifts between markets and squatters whose narrow alleys and walkways are impenetrable by motor vehicles. In other places, like Kingston, Jamaica, station wagons and mini–vans fiercely compete head–to–head with public buses, providing curb–to–curb delivery for a premium fare. And in increasing numbers of cities and towns around the world, dozens of young men on mopeds and motorcycles congregate at major intersections, offering feeder connections between mainline bus routes and nearby neighborhoods for a reasonable fare.

These privately operated, small–scale services are varyingly referred to as “paratransit”, “low–cost transport”, “intermediate technologies”, and “third–world transport”. The term adopted in this study is “informal transport”, for this term best reflects the context in which this sector operates – informally and illicitly, somewhat in the background, and outside the officially sanctioned public transport sector. While private, small–vehicle, for–hire services, such as taxis, can be found in all cities of the world, what separates informal transport operators from others is that they lack, to some degree, official and proper credentials. That is, they are unsanctioned. In some instances, operators lack the necessary permits or registration for market entry in what is a restricted, regulated marketplace. In other instances, operators fail to meet certification requirements for commercial, common–carrier vehicles – such as minimum vehicle size, maximum age, or fitness standards. Other violations include lack of liability insurance, absence of a commercial driving permit, and operation of a unclassified or substandard vehicle.

In spite of such transgressions, in many cases the informal transport sector is tolerated by public authorities, allowed to exist as long as it remains more or less “invisible” to most motorists, confined to low–income neighborhoods. Often, however, patrol officers and local “bosses” must be paid off for the right to operate in their “turf”. Informal transport is just one of many sectors of the underground economy that thrives in many third–world countries.

Informal transport is about as close to laissez–faire transportation as can be found. Through the invisible hand of the marketplace, those who are *willing–to–pay* for transport services make deals for lifts with those who are *willing–to–provide.* Thus, informal transport involves commercial transactions which distinguishes them, as transportation services, from the provision of free lifts, whether by friends, acquaintances, or truck– drivers back–hauling with empty loads from the marketplace, all common forms of mobility in many poor, rural areas. It is this more limited definition of informal transport, namely ones involving *pay–for–services,* that is adopted in this study.

Informal transport services are also notable for their role as “gap fillers”.[1] They exist in large part to fill service voids left unfilled by formal public transport operators. Rapid motorization, poor road facilities, and the inability to strategically plan for the future have given rise to horrendous levels of traffic congestion and air pollution in many mega–cities of the developing world. Formal public transport services are rarely up to the task of satisfying escalating demands for travel. Most public transport operators exist as protected monopolies, and accordingly lack the incentive to contain costs, operate efficiently, innovate, or respond to shifting market demands. Buses are often old, break down periodically, and get stuck in slow–moving traffic. Fares are frequently kept low to help the poor, however this reduces revenue intake which in turn precludes service improvements. All too often throughout the developing world, public transit finds itself in a free–fall of deteriorating service and shrinking incomes. It is only because regulations and rules are laxly enforced that unlicenced operators are “informally” able to step in and pick up where public transport operators have left off.

Notwithstanding these benefits, the informal transport sector is blamed for a long list of problems that afflict cities of the developing world. Aggressive and unruly driving among drivers whose very livelihoods depend on filling empty seats all too often causes serious accidents. Excessive competition has produced too many idling and slow–moving vehicles that jam critical intersections. Traffic tie–ups, along with poorly maintained vehicles

and low–stroke engine designs, have worsened air pollution. Often times, the sector is chaotic and disorganized.

The fact that nearly identical forms of illegal vans and motorcycle–taxis have surfaced in recent years in different corners of the globe, from Buenos Aires to Bangkok, from Cairo to Katmandu, suggest the presence of powerful underlying forces behind the emergence of informal transport services. Many of the same issues and concerns are being wrestled with by policy–makers across Asia, the Indian subcontinent, Latin America, and sub–Saharan Africa. Such commonalities call for a far–reaching global perspective on this often maligned and vaguely understood sector.

Transport decision–makers at all levels need strategies and approaches that will better rationalize, and when called for, coordinate and integrate informal transport services. An important challenge is to incorporate the informal sector into the mix of legitimate transport offerings so that it continues to provide much–needed and complementary services, but in ways that do not threaten public safety and welfare. It is vital that informal services be delivered, priced, and organized so as to complement and strengthen not only regional transport services but also regional economic and social development as a whole.

1.1 Attributes of the Informal Transport Sector

The informal transport sector comprises mostly small–vehicle, low–performance services that are privately operated and that charge commercial rates to, for the most part, low–income, car–less individuals making non–work trips. Like other informal businesses, generally speaking, the informal transport sector is made up of self–employed entrepreneurs who lack official registration, and who work long, hard hours in a highly competitive marketplace.

Each of these key traits is discussed below.

• *Entrepreneurialism:* Informal transport is without exception the domain of private sector – owned and operated by private freelancers. Drivers sometimes own vehicles, though in many instances vehicles are leased by absentee–owners for a set fee or a share of daily proceeds. Also, services are designed and priced according to what the market will bear. Because it is purely private, the informal transport sector receives no direct operating or capital assistance from the public largesse. In many cases, informal transport services are managed and coordinated through fairly formal arrangements, like cooperatives and route associations.

• *Small, aging vehicles:* Universally, small vehicles dominate the informal sector –small, at least in comparison to conventional buses and other modes of the formal sector. Usually, vehicles seat anywhere from one to sixteen passengers. Small vehicles enjoy several advantages over bigger ones: they take less time to load and unload, they arrive more often, and they stop less frequently.[2] They are also more maneuverable in busy traffic and can accelerate and decelerate faster. Studies show that passengers also tend to feel more secure in a smaller vehicle, and surveys reveal that minibus riders enjoy the camaraderie and “friendliness” of riding in cosy quarters.[3] In addition to being small, vehicles also tend to be old and poorly maintained, usually purchased second– and third–hand. Accordingly, they have all the appearance and “feel” of second– and third–class services –though, this is important, at second– and third–class fares.

• *Low–performance services:* A disadvantage of small vehicles is their low power–to–weight ratios, and thus slow average speeds. Slow speeds pose problems mainly because they are at odds with what is rapidly becoming the mobility standard of the world – automobile travel. Slow, stop–and–go movement, the predominance of old, under–maintained vehicles, and crowded, uncomfortable interior conditions mean service quality is often low. Typically, services extend over a limited geographic range, functioning primarily as distributors and feeders to mainline services.

• *Competitive, niche markets:* Pedicab, for–hire motorcycle, and jitney operators vie in fiercely competitive marketplaces, relying on hard work and low ratios of capital–to–labor to eke out a living. Ease of market entry often leads to a surfeit of service–providers and over–competition. Dependency on vehicle leasing and restricted access to credit to purchase capital limit the ability of most operators to save income and get ahead. Many are in hock for

their entire working lives to absentee–owners and brokers who, as a side–business, lease them vehicles. Because informal operators tend to be gap–fillers, picking up the pieces left by buses and metros, their markets are somewhat narrowly defined – often niches like transport to retail markets, runs to squatter settlements, hauling goods, and lifts to health clinics.

1.2 Roles and Benefits of Informal Transport

The informal transport sector provides real and meaningful benefits to significant segments of populations of many third–world cities. These are reviewed below.

1. *Mobility and Development*

The chief benefit of informal transport is that it provides much–needed and much–valued mobility, especially for the poor. Ninety–nine out of a hundred households in the poorest countries of Africa do not own or have access to a private automobile, thus they are entirely dependent on public transport for reaching jobs, markets, medical clinics, and other destinations. Women make up the majority of customers. Where bus and metro services are irregular, unreliable, or non–existent, informal transport operators provide indispensable services. Private jitneys and mini–vans often ply routes and enter neighborhoods that are inaccessible by buses. Many navigate along heavily pocked and rutted roads. During periods of heavy rains, pedicabs can negotiate roads and alleyways that are impassable by motorized means.

The important role in connecting poor neighborhoods to job centers is often under–appreciated. In the world's biggest cities, motorcycles, pedicabs, jitneys, and vans enable tens of thousands of custodians, chambermaids, sweat–shop and assembly–line workers, and day–laborers to reach their jobs each day. During night shifts, when buses are no longer running, they sometimes are the only means of getting around. Low–skilled labor is absolutely vital in providing the maintenance, service, and production inputs necessary to sustain a rapidly industrializing economy. Enhanced mobility increases the transactive space of a metropolitan area, enlarging the laborshed and providing access to enough potential workers so as to keep wages competitive in the global marketplace. Informal transport is often of greater value in delivering workers to the factories and mass assembly plants of the developing world than is realized.

Even though informal carriers provide much–valued mobility for the poor, the costs of atomized, uncoordinated services can quickly mount for many low–skilled day–laborers who are forced to live in informal housing settlements on the peripheries of the world's mega–cities. In the case of Mexico City, for example, the heavily subsidized, low–cost Metro rail system does not reach most barrios on the outer edges of the Federal District. Swarms of colectivo–minibuses have filled the service gap, providing connectivity between Metro terminuses and outlying residences. Because many of the poor living on the fringes make as many as five transfers per day to reach job sites, public transit expenses aboard informal carriers can consume as much as one–quarter of a day's salary.[5]

Increasingly, informal carriers are catering to the mobility needs of middle–class workers as well. Unlicensed commuter vans in Bangkok and São Paulo today directly compete with formal bus services, providing consumers with a wider choice of mobility options –notably, travel–time savings, air–conditioned interiors, and guaranteed seats in return for premium fares. Evidence from Brazil, presented in Chapter Eight, shows passengers on board clandestine vans particularly value the faster speeds of these unlicensed, limited–stop carriers; based on elasticity estimates, every 10 percent reduction in door–to–door travel times of illegal vans relative to legal buses is associated with an 11.7 percent increase in van ridership, all else being equal.

2. *Source of employment*

Worldwide, informal transport provides desperately needed employment for hundreds of thousands of unskilled, young men, many who have just arrived from the countryside in hopes of improving their lives. Informal transport is often a gateway to urban employment. Most drivers hope to eventually do better, finding better paying, safer, and less physically taxing employment.[6] Informal transport often generates enough income to get them established until they can land a better job.

In many poor cities, informal transport comprises as much as 15 percent of total employment. In Dhaka, Bangladesh the figure is closer to 30 percent, with a good 100,000–plus men and boys hauling patrons and goods aboard pedicabs for a living.[7] Adding in intermediate goods and services like vehicle maintenance and local vehicle production, assemblage, and parts retailing increases the percentages even more. The

significant employment role played by informal transport is perhaps no surprise given that the transport sector accounts for around 15 percent of the gross domestic products of many industrialized nations. There is no reason why transport, even if informally provided, cannot play as big of a role in the creation of wealth in squatters, kampungs, flavelas, and barrios as in affluent nations.

Critics question whether this form of livelihood is, on balance, socially productive. Ultimately, the marketplace is the mediator – if enough customers are willing to pay enough for self–employed operators to make ends meet, then society as a whole is better off. Problems only abound when there are excessive numbers of service–providers. However, one might ask whether society would fare for the worst if many were forced out of the informal transport sector, left to fend for their own on the streets. Resulting increases in crime and illicit activities that are more harmful than informal transport might very well carry even higher social costs. And the contributions informal operators make to public treasuries should not be overlooked. By paying taxes on fuel and vehicle registration, and fees for operating licenses, the informal transport sector generates revenues for local governments. Thus, unlike public transport operators, informal operators contribute monies to, rather than siphon them away from, public coffers. Moreover, many drivers have to pay off police officers and public officials for the right to operate, effectively transferring income to lowly paid civil servants. In a roundabout way, the sector relieves local governments of some of the burden of compensating their workers.

3. *Complementarity*

Informal transport is often leaned upon by formal operators to provide feeder connections between neighborhoods and trunk routes. Because feeder services carry fewer customers than mainline services, they tend to cost more per passenger trip. Informal services thus aid public transport operators by improving connectivity as well as off–loading higher cost services. Studies also show that paratransit modes, like pedicabs and jitneys, enhance mobility by compensating for the absence of functional road hierarchies in many cities of the developing world. In southeast Asia, the rich diversity of paratransit offerings produces a hierarchy of services in terms of seating capacities, operating speeds, and geographic coverage that help make up for the lack of good distributor roads and the discontinuity of local streets.

The compensatory role played by informal transport has been particularly[8] essential in light of declining public resources and institutional capacities. In sub–Saharan African cities, the supply of buses available to public transport companies fell by 12 percent between 1986 and 1989, a period when population was growing by 6 to 9 percent. The *matatus* of Nairobi, the *trotros* of Ghana, and the *okada* of Nigeria have stepped in to make up the difference. In Rio de Janeiro, severe overcrowding on public buses triggered an incursion of 600–plus clandestine buses – or 10 percent of the regional bus fleet – in the early 1990s. In Asia, where recent financial crises have depleted public treasuries and crippled many public services, the informal transport sector has been tacitly called upon to serve rising demands for mobility. In Phnom Penh, which has no public transport system, crossing the city leaves few choices for car–less residents other than riding a bicycle, hiring a *cyclo* (pedicab), or jumping on one of the city's thousands of motorcycle taxis, called *moto–dub* (a Khmer version of the French *moto–double* two–seat motor–scooter).[10]

Besides providing complementarity, informal transport services also tend to enrich service offerings by providing greater diversity and differentiation. In much of the developed world, a "one–size–fits–all" public transport service predominates. Often, the only choices beyond personal car travel are expensive taxis or conventional 55–passenger buses that operate on fixed routes every thirty minutes. There is tremendous diversity in travel preferences – some want fast, comfortable services and are willing to pay a premium fare for them, while others are satisfied to travel more slowly and give up some comfort in return for a break at the farebox. Informal transport enriches the tapestry of urban transport offerings.

4. *Efficient. Low Cost Services*

As noted, informal transport is resourceful and cost–effective. Hard work and no–frill services keep costs low. The drive to maximize earnings and frequent passenger turnover produce high patronage counts. Unencumbered by petty rules and bureaucracy, independent operators are also ultra–responsive to emerging and shifting market trends. Research shows that commercial jitneys and minibuses confer net economic benefits. One study concluded that each minibus in Kuala Lumpur averaged around US$ 26,000 (in 1998 currency) in total public benefits each year.[11] Studies of minibuses in Hong Kong and jeepney services in Manila have found annual rates of return on capital investments in the range of 100 to 130 percent.[12] As passenger volumes rise above a certain threshold (usually 5,000 or more per direction per hour), the economic advantages of paratransit begin to plummet, reflecting the limitations of small vehicles in carrying large line–haul loads. Accordingly, paratransit best operates in a supporting and supplemental, rather than substituting, role.

The efficiency benefits of informal services likely extend to the formal sector as well. Their existence alongside public bus and rail systems creates competition in the markets, setting in motion competitive pressures on formal operators.[13]

5. *Market Responsiveness*

Informal operators can easily alter schedules, routes, and operating practices in response to shifting market conditions. Private minibus and micro–vehicle operators are more likely to craft new, tailor–made services in response to increases in suburb–to–suburb commutes, trip–chaining, and off–peak travel than are public authorities. Their inherent flexibility and sensitivities to changing markets stand in sharp contrast to the rigidities and unresponsiveness of protected monopolies.

1.3 Issues and Concerns

Pressure to regulate and even eliminate the informal transport sector comes from many quarters. A central concern is that the sector is responsible for significant negative externalities, like traffic congestion and accidents, that harm public safety and welfare. As largely laissez–faire, unrestricted services in poor cities with high unemployment rates, critics contend that the sector breeds over–zealous competition and predatory behavior. Overcompetition – too many operators vying for limited numbers of customers – crowds streets and poses accident risks. These concerns are discussed below.

1. *Traffic congestion*

Critics charge that unrestricted market entry leads to excessive supplies of service–providers, and in the quest to survive in the marketplace, cutthroat competition. Traffic slows to a crawl not only because there are too many vehicles but also because drivers cut each other off, stop in middle lanes to load customers, and weave erratically across lanes. Since marketplaces and bus terminals are often near key intersections, the congregation of private informal operators nearby forms bottlenecks that clog traffic upstream.

In addition, many informal services are viewed as inefficient users of road space. While minibuses and three–wheelers generally consume more road space per passenger than conventional buses, this is partly offset by smaller vehicles' maneuverability advantages and faster speeds. Human–powered three–wheelers, or pedicabs, have long been chastised for jamming up roads, and for this reason many cities in the developing world have banned them. Hanoi authorities estimated that a pedicab (known locally as cyclo) passenger requires an area 20 times larger than that required for one bus passenger. Rather than banning them outright, however, some cities like Yogyakarta, Indonesia and Dhaka, Bangladesh, have provided separate lanes for slower moving vehicles like pedicabs.

2. *Disorderly operations and unfair practices*

Fierce competition for customers invites chaotic and collectively damaging driving behavior. Informal operators frequently head–run on formal, scheduled services, getting in front and arriving first at busy pick–up points. And if demand tapers off, drivers might elect to halt services altogether. In Kingston, Jamaica, illegal operators, called "robots", have been known to kick everyone off their vehicles, turn around, and head the opposite direction when there is more money to be made going the other way. The drive to maximize personal gain, regardless of how others might be impacted, leads to such unscrupulous behavior. This is the classic "collective action dilemma" wherein private motives are at odds with the larger public interest.

Besides head–running, another common practice among informal operators is poaching. In Rio de Janeiro, illegal van operators hire touts to hang around bus terminals and coax waiting customers to hop aboard a nearby van instead. Another common form of poaching is for illegal vans, pick–ups, and sedans to stop and solicit customers at bus stops, locations where even taxicabs are normally prohibited from stopping.

Perhaps nowhere have the repercussions of cutthroat competition been more serious than in South Africa. There, intense rivalries over turf among private minibus operators have led to full–fledged gang warfare, sometimes with lethal consequences. In Johannesburg, pirate operators have gone to such extremes to eliminate competition as boarding back seats of legitimate minibuses and shooting their rivals, in what has been dubbed the "death from the back seat" strategy.

3. *Accidents and public safety*

Due to hyper−competition, informal operators are notorious for driving aggressively and recklessly. Many are guilty of cutting off cars to pick up fares, blocking lanes to load and unload passengers, overloading, operating unsafe vehicles, ignoring red lights, and excessive cruising and hawking for customers. Some operators knowingly and openly disobey traffic rules, though in fairness, flagrant violation of traffic laws is commonplace in much of the developing world, not just among jitney operators. Others are simply unaware of traffic rules because they have no driver training and are illiterate. Additionally, long, hard working hours cause driver fatigue, a significant contributor to accidents. Safety is also compromised when too many customers are allowed on board. Overcrowding puts children, the elderly, and the frail in harms way when vehicles are abruptly stopped. It also invites pickpocketing and bullying, what have become nearly epidemic problems in parts of central America. The widespread use of poorly maintained vehicles running on under−inflated, bald tires only increases the risk of accidents. And mixed traffic operations of highly vulnerable modes like motorcycle−taxis and pedicabs (many of which lie in the blind spots of car−motorists) invite serious injuries and fatalities.

4. *Air pollution and environmental problems*

Minibuses, motorized pedicabs, and for−hire station wagons are gross−emitters of air and noise pollution for a number of reasons: diesel propulsion; absence of catalytic converters; reliance on old, decrepit vehicles with under−tuned engines; frequent acceleration and deceleration in congested traffic; and the prevalence of low−stroke engines. Delhi's vast population of two−wheel motorcycles (1.8 million) and two−stroke engine−powered auto−rickshaws (78,000) emit more hydrocarbons and carbon monoxide per kilometer than even fully loaded buses.[14] Dhaka's auto−rickshaws emit 30 times more pollutants than a normal car.[15] Air samples collected near a Dhaka auto−rickshaw stand showed concentrations of volatile organic compounds (precursors to the formation of smog) to be 400 percent to 745 percent above accepted standards; concentrations of toluene (a known carcinogen) are also dangerously high.[16] In Calcutta, where auto−rickshaws and private buses of all shapes and sizes handle over 6 million trips on an average weekday, an estimated 60 percent of residents suffer from respiratory diseases attributable to airborne pollutants.[17] Air pollution problems are exacerbated since informal transport operators congregate in densest part of cities where pollutants and contaminants are most easily contained and entrapped. Poor vehicle maintenance, commonplace among cash−strapped informal operators, and the prevalence of poorly refined local gasolines only make matters worse. Thus in a city like Dhaka, where the number of motor vehicles is small by global standards, air pollution is a serious problem because of the predominance of old, poorly maintained two−stroke motorcycles, auto−rickshaws, and micro−buses (*auto−tempos*).

5. *Cream−skimming*

Unbridled competition is also blamed for "skimming the cream" – i.e., the tendency to operate only along lucrative routes, leaving high−cost, unprofitable services to the public sector. A regulated transportation company, the argument goes, operates in the public interest by plying both money−making and money−losing routes, a practice known as cross−subsidization. Regulators maintain that the public has an obligation to protect carriers from illegal and excessive competition and ensure that franchise−holders receive a fair return on investment. Because public transport operators almost universally incur deficits, however, some counter that private paratransit operators end up skimming losses, not "cream". And as noted, since many informal operators often serve low−density, out−of−the−way places, the amount of deficit−skimming they provide (were public operators to serve these areas) is likely substantial.

In some parts of the world, informal operators have lured such large numbers of customers from public buses that formal services are in serious jeopardy of collapsing. In Buenos Aires, massive losses in patronage have forced dramatic cuts in bus services along some corridors, undermining the ability to coordinate timetables and fare systems due to the loss in critical mass. From 1992 to 1999, franchise bus operators lost 25 percent of their patronage – representing 3 million trips per day – to private for−hire cars (called *remises)* and illegal *colectivo−vans.*[18] While some contend these are problems only insofar as formal operators are reluctant to streamline and restructure services, in reality legitimate carriers often have their hands tied. Many operate under long−term franchise agreements and must pay−off debt for past vehicle acquisitions they were contractually required to make, regardless whether vehicles are on the streets or not.

Left unchecked, the problems posed by unfair and predatory competition often fester with time. This is partly due to the political power base illegal transport operators are able to build. Once they become part of the status quo, and gain a foothold as a major presence in the local transportation scene, it becomes difficult for authorities to gain any kind of significant control over them.[19]

6. *Intangible Factors*

While the above−outlined factors are chief concerns, less tangible factors also account for the anti−paratransit stance of local and provincial governments. Among these are: a cultural predisposition among foreign transportation consultants to expedite automobile flows, many of whom take only taxis when abroad and fail to appreciate the importance of informal transport to the poor; pressure from foreign lenders seeking to export modern transport technologies to developing regions; and in the drive toward modernization, a mind−set among public officials, especially in image−conscious national capitals, that jitneys and micro−buses are inferior, obsolete modes suited only for backward countries. One must question such perceptions. Among professionals and politicians, only the downside of informal transportation gets recognized, in large part because these individuals experience only the costs and none of the benefits. That is, it is the motoring class that suffers the most from the congestion and on−road safety threats posed by informal operators. Few of these individuals ever need to board a jitney or hire a motorcycle, thus the vital mobility and equity role the informal sector plays is not fully appreciated by those in positions of power.

There is largely an absence of any kind of normative policy framework when it comes to informal transport services. This is reflected by the fact that fairly comparable informal transport services are perceived and treated unevenly in different parts of the developing world. Jakarta's decision to eliminate the pedicab sector by confiscating vehicles and discarding them in the sea stands in contrast to Manila's acceptance of pedal−powered transport as a viable feeder service in several commercial districts of the city. While Nairobi has embraced and tacitly promoted private minibus and pick−up truck services, in Abidjan these commercial services have been all but disbanded.

1.4 The Informal Economy

Many urban services are organized informally, including water delivery, refuse collection, and food supply. According to the World Resources Institute, the urban informal sector currently accounts for anywhere between 30 percent and 70 of the economically active urban population of the developing world.

The informal transport sector is just one part of the dual economy that characterizes most developing cities of the world. J.H. Boeke first advanced the theory of economic dualism, distinguishing the livelihoods of indigenous populations from those of colonial transactions through enterprises and firms.[23]

It was not until 1970, however, that the informal sector was articulated beyond the singular dimension of economic dualism. In a seminal study of small enterprises in Kenya, the International Labor Organization characterized informal economies in a multitude of ways: ease of market entry and exit, reliance on indigenous resources, extended family ownership of capital, small scale of operations, labor−intensiveness, adaptive uses of technology, the accumulation of skills outside formal education and training, and minimal government intervention and regulation.[24]

The dichotomy between formal and informal sectors can be viewed along several key dimensions. Table 1.1 contrasts the two sectors in terms of labor−market segmentation, class, and internal organization. The prevalence of small−scale, labor−intensive, and adaptive services does not fully characterize the informal realm, however. Informal services also imbue subtle yet important social relationships. Vital to their existence are the often highly personalized relationships between service−providers and clients as well as unwritten social norms and codes of behavior among competitors themselves.

Another important trait of the informal economy is that it fills a vacuum, providing vital public services to poor and marginalized populations whose needs go unmet by local governments.[25] It is on these grounds that Hernando de Soto finds strong social justice arguments in favor of its existence.[26] De Soto points out that while the means of informal workers are "illicit", their ends are "licit". Informal services meet basic human needs, generate incomes, and provide a foundation for deprived individuals to raise families in difficult urban situations. There is nothing inherently immoral or criminal about providing poor people transportation, hauled−in water, or meals from a pushcart. In the case of refuse scavengers, many provide genuine public benefits by recycling wasted products and reducing pressures on landfills.[27]

There is an inverse relationship between the size and importance of the informal economy and a nation's wealth and well−being. Economic development brings about the provision of formalized transportation, water−supply, and solid−waste services. It also strengthens the institutional capacity of governments to intervene and regulate the marketplace.[28]

Large cities of the developing world are natural breeding grounds for informal transport services. The absence of reliable formal services has left huge voids that private operators have adeptly filled. Through a combination of tradition, circumstances, and economic need, informal transport services today are most prevalent in sub−Saharan Africa, south and southeast Asia, islands of the Pacific and Caribbean, and equatorial parts of Latin America. Jitneys, shared−ride taxis, for−hire motorcycles, and passenger−carrying pick−ups ply the streets of not only mega−cities, but rural villages and townships as well. However, informal services are thought to capture larger shares of vehicular trips in urban than in rural settings since trip distances tend to be longer and more people can afford fares. And while bigger cities have more fully developed public transit routes than smaller ones, they often lack good feeder connections, thus creating a void for pedicabs, motorcycles, and minibuses to fill. In Indonesia's largest cities, for example, informal transport services accommodate an estimated 50 percent of all mass transit trips.[29]

Table 1.1. Contrasting Dimensions of Formal Versus Informal Sectors

Dimension	Formal	Informal
Economic Standing	Middle and Upper Class	Lower Class, Poor
Political Influence	Strong, Empowered	Weak
Legitimacy	Legal, Regulated	Illegal, Unregulated
Society and Culture	Modern	Traditional
Internal Organization	Orderly, Vertically Integrated	Less Structured, Horizontally Integrated
Assets and Capitalization	Intensive	Minimal
Financing and Credit Access	Commercial Banks	Family and Loan Sharks
Technology	High Tech	Low tech
Skill Levels	Knowledge−Based, Cognitive	Labor−Based, Adaptive
Legal Status	Registered	Unregistered

Sources: H. Lubell, *The Informal Sector in the 1980s and* 1990s, Paris, The Development Centre of the OECD, 1991; A. Portes, M. Castells, and L. Benton, eds., *The Informal Economy: Studies in Advanced and Developing Countries,* Baltimore, Johns Hopkins University Press, 1989; W. Sarosa, *The Dual "Formal−Informal" Growth of Jakarta: A Study of the Morphological Impacts of Economic Growth in a Metropolis of the Developing World,* Berkeley, University of California, Department of City and Regional Planning, unpublished Master's thesis, 1993.

It would be a mistake, however, to conclude that informal services are solely the domain of third−world countries. They exist to some degree in low−income neighborhoods virtually everywhere. In Belfast, individuals with automobiles began informally transporting their neighbors to the city center in the wake of Northern Ireland's social upheavals in the early 1970s. Today, over 400 "black cabs" (named for the distinctive Austin FX4 taxicabs purchased on London's secondhand market) haul some 40,000 customers a day, carrying up to six passengers per vehicle and deviating from main routes as requested.[30] Even in the world's wealthiest country, the United States, informal services thrive in a handful of cities with large Latino and Caribbean populations, notably Miami and New York City. Over 5,000 illegal vans, station wagons, and private cars are estimated to roam the streets of Manhattan, the Queens, and Brooklyn, with operators sometimes poaching customers waiting at bus stops and near subway portals.[31] Operated by people of Caribbean descent for people of Carribean descent, vans and private cars have an edge over public buses because they are cheaper, faster, more comfortable, pass by more frequently, provide guaranteed seats, and take people closer to their destinations. The illegal vans that swarm around major bus terminals in the Jamaica section of Queens, New York have much in common with their counterparts in the Carribean − indeed, many drivers at one time in their lives plied the streets of Kingston and Montego Bay.[32] Additionally, studies have found that informal station−wagon and jitney services thrive in African−American neighborhoods of Philadelphia, Pittsburgh, Omaha, Boston, and Chicago, although they no doubt exist elsewhere as well.[33] Many operators hang around supermarkets and shopping centers, providing door−to−door lifts to areas many legal taxi operators refuse to go to.

While informal services benefit mainly the poor, it would also be wrong to assume the professional class does not engage in informal transport practices. In San Francisco−thousands of commuters spontaneously organize themselves to ride to work with Bridge to use the HOV bypass lane, shaving 25 minutes off the

morning commute and saving $2 in bridge tolls.

1.6 Study Purpose and Organization

1.6.1 Objectives and Approach

This study seeks to provide a global portrait and policy−relevant insights into the informal transport sector of the developing world. Within policy−making circles, the sector is often ignored, and when recognized, it is often maligned. Few foreign and multilateral loans for urban transport projects in the developing world devote any resources to the sector. While occasional studies have been done of specific sub−sectors in specific cities, there has been little, if any, systematic analysis of informal transport services from an international standpoint. This study aims to fill this void, at least in part.

1.6.2 Methodology

This study relied on a balance of field research, literature and secondary reviews, empirical investigations, and interviews of various stakeholders in examining informal transport services. Secondary data and research reports were exploited to the degree possible. For the case of Jakarta, Indonesia, primary data were compiled from an in−field survey of pedicab (becak) and hired−motorcycle (ojek) operators. Qualitative data also formed.

For the case of Jakarta, Indonesia, primary data were compiled from an in−field survey of pedicab (becak) and hired−motorcycle (ojek) operators. Qualitative data also formed important inputs to the research. These data were elicited through interviews with various stakeholders, including operators, government officials, scholars, and NGO representatives; more informal conversations with operators and riders; structured observation rides; and from casual in−field observations.

Compiling reliable information on informal transport services, it must be recognized, is exceedingly difficult. Little is known about the actual supply of informal services since, after all, they are unregistered. And because drivers operate illegally and are often harrassed by law−enforcement officers, many are understandably reluctant to talk about their businesses, especially to strangers. Accordingly, about the best one can hope to do is string together a disparate collection of anecdotes, non−scientific surveys, interviews, field observations, and personal accounts to begin to sketch a portrait of this sector − somewhat like looking at a jig−saw puzzle with half the pieces missing.

1.6.3 Report Organization

This report is divided into four parts. Part One, which includes this first chapter, aims to define and characterize, and thus hopefully give more visibility and understanding of, the informal transport sector. The next chapter focuses on the informal transport marketplace from both demand and supply perspectives. It also reviews what is known about performance impacts. It is followed by a chapter devoted to the organizational, institutional, and regulatory context of informal transport services.

Parts Two and Three present detailed case studies of informal transport services in different parts of the world. The cases in Part Two are drawn from Southeast Asia, long a stronghold of informal transport services: Bangkok, Thailand (Chapter Four); Manila, the Philippines (Chapter Five); and Jakarta, Indonesia (Chapter Six). Part Three extends the global perspective, drawing upon case experiences from Kingston, Jamaica (Chapter Seven), Brazil (Chapter Eight), and several countries of Africa (Chapter Nine).

The report concludes with two chapters which frame policy strategies and advance recommendations for rationalizing informal transport services. Chapter Ten proposes policy reforms that involve institutional, financial, operational, regulatory, and management changes to current practices. The final chapter summarizes core findings and lessons of the research, and identifies promising areas for follow−up work.

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Chapter Two: The Informal Transport Market

The informal transport marketplace stands as an enigma to many who have never ridden a pedicab, hired a motorcycle, or hopped aboard a scruffy minibus. Regardless of how these services look from the outside, they form a bonafide marketplace wherein those willing–to–provide hook up with those willing–to–pay. Admittedly it operates on the fringes of society and is not particularly well–understood, but just the same informal transport is, stripped to the basics, about profit–seeking operators serving consumer demands at market–mediated prices.

This section describes, compares, and characterizes the informal transport marketplace. Secondary data sources are mainly relied upon in portraying the supply, demand, and performance characteristics of informal transport worldwide. In addition, results of original research conducted on pedi–cab *(becak)* and hired–motorcycle *(ojek)* services in Jakarta, Indonesia (reported further in Chapter Six) are integrated into the discussions.

Table 2.1 summarizes some of the core traits of informal transport services relative to formal ones. Flexibility is a trademark of informal services – spatially (e.g., variable routing), temporally (e.g., variable schedules),

and monetarily (e.g., variable prices). It is because of the unconventional, variable nature of informal services that generalizations are difficult to draw. What can be said, however, is that flexibility and running a “lean” one−man business allows informal operators to be remarkably demand−responsive, quick to realign services to satisfy new and emerging markets.

From the provider’s perspective, informality has it advantages. By skirting formal regulations, operators have more latitude in designing services and responding to market shifts. Informality also saves money since providers avoid paying many duties and taxes and complying with labor−protection laws. The desire to exploit cheap labor, however, is not a prime motive for informality. Most informal workers are self−employed and do not hire employees.[1] That some operate outside of the law has not gone unnoticed among properly registered operators, and indeed it is many times legal operators who pressure illegal ones to eventually register or else leave their turf

Compared to most other informal services, the social costs that accompany unregistered and unlicensed transport services are fairly high. Food hawkers, scavengers, and water−supply vendors, for instance, do not impose costs that directly impinge upon the middle class. Their services are consumed directly by the poor and external spillovers are fairly benign. Such cannot be said about illegal microbuses that clog up major thoroughfares or increase the risk of accidents – it is car−owning populations that directly suffer the consequences, Thus, the hostility shown toward informal transport vis−a−vis other illicit urban services reflects to a large degree the fact that ill−effects fall disproportionately on privileged, influential members of society.

Table 2.1. Contrasting Dimensions of Formal Versus Informal Transport Sectors

Dimension	Formal	Informal
SUPPLY:		
Service Structure	Fixed Route, Standardized	Variable Route, Adaptive
Delivery	Line−Haul, Trunk−iine	Distribution, Feeder
Scheduling	Fixed Timetable	Market Driven, Adaptive
Reliability	Reasonably Dependable	Inconsistent
Vehicle Type	Large	Small to Medium
Ownership	Public and Private	Private
Market Perspective	Monopolist	Entrepreneurial
Labor	Semi−Skilied	Semi−to−Non−Skilled
Organization	Bureaucracy	Route Associations
DEMAND & PRICE:		
Market Focus	Mixed	Niche
Main Trip Purposes	Work, School Shp,	Mode Access
Trip Distances	Medium to Long	Short to Medium
Customer Relations	Impersonal	Interpersonal
Socio − Demographics	Low to Moderate Income	Low Income
Fare Structures	Fixed, Uniform	Variable, Differentiated

2.1 The Supply Side: Vehicles and Services

A core distinction among informal services is whether they are “taxi−like”, providing door−to−door connections, or “bus−like”, following more or less fixed routes. In general, small− vehicle services, like pedicabs, hired−motorcycles, and microbuses, operate akin to taxis.[2] As passenger loads increase, service−providers begin to ply fixed routes because of the impracticalities of delivering lots of unrelated customers to assorted destinations. Accordingly, “bus−like” services consist mainly of larger vehicles like commercial vans, pick−up trucks, and minibuses.

One common feature of informal transport is that it relies on pneumatic tire vehicles that share surface streets with regular traffic, with a few very minor exceptions (e.g., the trolley skates of Manila that operate along

commuter rail tracks, reviewed in Chapter Five). Their mixed–traffic operations are both a blessing and a curse – on the one hand, they relieve governments of costly guideway investments and, because of their nimbleness in traffic flows, efficiently exploit and fill–in available roadspace; on the other hand, by virtue of their sheer numbers, slow speeds relative to bigger vehicles, and the aggressive nature in which they are driven, informal mini–vehicles are often significant contributors to traffic congestion and traffic accidents.

A simple definition of informal transport is *illicit* paratransit. To the naked eye, the sector consists of minibuses, microbuses, station wagons, motorcyles, and tri–wheleers, modes often lumped together under the moniker "paratransit"– scaled–down versions of collective–ride transport that capture the full spectrum of service–price options that lie between conventional buses and single–passenger taxis.[3] It is their illegal, non–sanctioned status that makes them illicit.

2.1.1 Classes of Transit Services

Informal transport spans across most classes of mass transportation although in general the sector is made up of comparatively small passenger–carrying vehicles. Table 2.2 summarizes five–classes of rubber–tire, mixed–traffic vehicles, with the largest and fastest vehicles occupying the lowest class (class I) and the smallest, slowest ones belonging to the highest (class V).

Classes are partly distinguished on the basis of whether vehicles are motorized (classes I through IV) or non–motorized (class V). Another distinction involves the relatedness of passengers. The larger vehicle classes (I and II) represent "collective" carriers – i.e., they serve collections of unrelated individuals, usually 12 or more, along fixed or semi–fixed routes. Providing "shared–ride" services among either related parties or small sets of unrelated passengers (in the range of 4 to 11) heading in the same general direction are the class III microbuses, station–wagons, pick–ups, and jam–packed sedans. Class IV (motorized tri–wheel and motorcycle) and class V (non–motorized pedal– and horse–powered) carriers handle door–to–door trips for individuals or related parties of up to 3 persons (and occasionally one or two more, if small children).

In sum, lower class vehicles – I through III – generally ply fixed routes and only make minor detours off of fixed paths. Accordingly, they represent "route–based" and "bus–like" services. Higher class (IV and V) services tend to be more demand–responsive, providing door–to–door services (though some class III services operate similarly). Accordingly, they tend to be more "taxi–like". Of course, many informal transport vehicles do not neatly fit into any one category, and are hybrids. In practice, for instance, many microbuses tend to follow fixed routes but will make a detour at a passenger's request for an additional fare.

Table 2.2 Summary of Classes of Paratransit Vehicles that Operate Informally

	Service Features		Passenger		
CLASS:	**Routes**	**Schedules**	**Capacity**	**Service Niche**	**Service Coverage**
I: Conventional Bus	Fixed	Fixed	25–60	Line–Haul	Region/Subregion
II: Minibus/Jitney	Fixed	Semi–Fixed	12–24	Mixed	Subregion
III: Microbus/Pick–Up	Fixed	Semi–Fixed	4–11	Distribution	Subregion
IV: 3–Wheeler/Motorcycle	Variable	Variable	1–4	Feeder	Neighborhood
V: Pedicab/Horse–cart	Variable	Variable	1–6	Feeder	Neighborhood

Vehicles used in the informal transport sector range from one–person rickshaws up to minibuses and open–bed trucks lined with wooden benches that carry 100 –plus passengers. The wide diversity reflects the wide array of urban travel desires, coupled with ease of market entry and minimal government intervention.

For the most part, informal services are found among paratransit modes spanning classes II through V. Informal (class I) bus services can be found along inter–city routes in parts of South America, sub–Saharan Africa, and East Asia, though overall, class–I buses make up a small fraction of informal carriers worldwide. Below, vehicle characteristics of each class of informal transport services are outlined.

> *Class I:* Included here are standard stage coaches and double–decker buses that provide trunk–line services. Since conventional bus services are predominantly under public–sector control, and if not, operate under franchise arrangements, few are unlicensed and unregistered. Informal buses have long operated between Brazilian cities, though their numbers have dwindled since the 1980s following the franchising of intra– and inter–city bus routes. Today, there are class–1 illegal vehicles plying the highways of Nigeria, Nicaragua, and Vietnam. In Nigeria, vehicles with wooden or metal bodywork built on truck chasses,

called *molue, bolekaja,* and *ongoro,* carry between 25 and 100–plus customers (at crush conditions). Similar contraptions are found on the streets of Havana, where trucks pull huge double – jointed buses filled to the brim with passengers, earning them the affectionate title of *camellos,* Spanish for "camel" (Photo 2.1).

Class II: Carrying intermediate loads in the range of 12 to 24 riders are a mix of minibuses, elongated jeeps, and passenger–carrying trucks. Included here are Manila's *jeepneys,* Jakarta's *mikrolets,* and Mexico City's *colectivos,* all of which operate as fixed–route, shared–ride carriers, boarding and discharging passengers anywhere along the way, and occasionally deviating routes as custom, traffic, and hour permit. One global study of jitney–like services rated them high in terms of service frequency, speed, load factors, and productivity (cost per passenger), but gave them poor marks for service regularity and dependability (except for peak hours), comfort, and safety.

Photo 2.1 Havana's Class–One Fixed–Route "Paratransit".

While not truly informal transport in that the services are state–run, these 300–passenger mega–carriers are a bonafide form of home–grown, indigenous public transport. (*photo credit.* B. Hadenfeldt)

In truth, many class–two services – be they *matutus* mega–vans of Nairobi or the *carros por puesto* minibuses in Caracas – have some unique twist. Some regularly make route detours and others don't; some load customers in the rear of vehicles and others on the side; some are governed by cooperatives and others engage in fierce head–to–head competition; some boast padded seats and others offer simply wooden benches. A handful of minibuses, like the red Public Light Buses (PLB) of Hong Kong, are very flexible, operating like exclusive–ride taxis following no prescribed routes and charging variable fares (Photo 2.2). Indeed, PLB fares swing up and down according to market conditions, with some drivers doubling their prices during torrential downpours. Such services, however, are not the norm.

Class III: Micro–vehicles encompass station wagons, sedans, pick–up trucks, and any number of locally designed and crafted four–wheeled carriers that haul in the range of four to eleven passengers (Photo 2.3). Called *kombis* and *micro–buses* in many parts of the world, class–three carriers are in many ways hybrids between the bus–like class I and II services and taxi–like class IV and V services. Most micro–vehicles ply semi–fixed routes, however in that passenger loads are relatively small, drivers are often willing to make modest detours to offer front–door delivery in return for a surcharge. A good example of such carrier is the one–of–a–kind modified micro–vans of Surabaya, Indonesia, called *angguna,* that carry up to four passengers and a cubic meter of goods on an open tray–top.

Photo 2.2. Class II Vehicle: Hong Kong's Public Light Buses.

Free–ranging, private owned and operated red–striped minibuses ply the streets of Victoria Island, Hong Kong. In 1998, some 4,000 16–seat minibuses operated along more than 300 routes, carrying 1.75 million passengers each day. Studies show the unsubsidized and largely unregulated red–striped minibuses are more market–responsive and cost–effective than the subsidized and more tightly regulated green–striped minibuses.

Photo 2.3. Class III Vehicle: Selman Microbus in Hanoi, Vietnam.

A converted mini–panel truck allows rear–door loading of up to eight seated customers – six in the back and two in the front.

Class IV: The smallest motorized modes are the three–wheelers that accommodate 2 to 4 passengers, such as Bangkok's *tuk–tuks,* named for their loud two–stroke engines, Manila's motorized *tricycles,* and Jakarta's *bajajs.* Also included here are easily the fastest–growing informal transport mode – motorcycle–taxis (called *ojeks* in Indonesia, *okada* in Nigeria, *moto–conchos* in the Dominican Republic, and *moto–dub* in Cambodia).

Class V: The final class includes all forms of non–motorized services: three–wheel, pedal–powered vehicles – e.g., Jakarta's *becaks* and Dhaka's *rickshaws;* horse–powered four–wheel vehicles – Manila's *calesas* and India's *tongas;* and other truly idiosyncratic services, like the Philippine's *trolley–skates* and passenger–carrying farm plows, *kuliglig.*

Because many vehicles used for informal services are modified or converted pick–ups, jeeps, motorcycles, and sedans, they are sometimes known as "intermediate technologies". This reflects not only their middling status as mechanical forms of conveyance but also the inventiveness and resourcefulness shown in crafting low–cost but effective transport to serve the unique mobility needs of the developing world's many poor, transit–dependent individuals (Photo 2.4).

Besides being non–conventional and adaptive in their characteristics, informal transport vehicles also tend to be fairly old, most often second–, third–, and older– hand vehicles (Photo 2.5). Many are imported from

Japan, America, and other first–world countries after having already racked up 300,000–plus kilometers on the odometer. On the one hand, used vehicles keep capital–purchase costs low. On the other hand, the higher probability of in–service breakdowns and stalls undermines service quality. Older and under–maintained vehicles are also guilty of disproportionately high rates of air and noise pollution, greenhouse gas emissions, and fuel consumption.

2.1.3 Class Two and Three Services: Semi–Fixed Route Jitneys

This section provides more detailed discussions on the most common form of semi–fixed route services – what conventionally are called jitneys. The focus of this section is on operational, as opposed to vehicle, characteristics.

Jitneys are minibuses and sometimes station wagons that operate along fixed routes, with fairly loose timetables, that usually (though not always) pick–up and unload passengers anywhere along the route. Examples include Manila's *jeepneys,* Pretoria's *combis,* Surabaya's *angkut,* and Kuala Lumpur's Bas *Mini* (Photo 2.6). In most instances, class–two and three services *compete with* rather than *complement* formal bus and rail services. In terms of service features, they lie midway between conventional buses and more "primitive" forms of paratransit like motorized three–wheelers. Their willingness to collect and discharge passengers anywhere along a route distinguishes jitneys and other class–two carriers from conventional buses, though this customer benefit is at the expense of non–customer disbenefits – in the form of mid–lane stopping and blocking traffic.[6]

Photo 2.4. Truck passenger transport in Santiago, Cuba.

With subsidized Soviet fuels having vanished, many motorized vehicles have been pressed into service as informal transport carriers throughout Cuba, including farm trucks. With few formal public transport options, Cubans have taken to hitchhiking to get around. At every major junction outside of towns throughout Cuba one finds *Amarillos,* traffic wardens dressed in yellow, who organize a queue, stop traffic to find out where a passing truck or van is heading, and loads passengers going the same direction. (*Photo source:* D. Harvey, Evolution in the revolution: Cuba, *National Geographic,* Vol. 195, No. 6, 1999, p. 18)

Photo 2.5. Old, Multi–Generational *Colectivo* in Santo Domingo, Dominican Republic.

Hard–running of old vehicles in disrepair causes in–service breakdowns and unreliable services.

Photo 2.6. Bas Mini of Kuala Lumpur, Malaysia.

The private minibus, based Bas Mini in Malay, has for years generated profits against huge losses sustained by larger publicly owned buses.

A 1990 study, summarized in Table 2.3, compared characteristics of six jitney–type services across the world. All were four–wheel vehicles that carried moderate–size loads on fixed routes, stopping anywhere along the way to a curbside hail. Only in the case of Caracas's *Carros por Puestos* did drivers leave their established routes. Another study, of five Asian cities, found jitneys averaged travel speeds of 13 kilometers per hour, carrying each passenger, on average, 36 minutes.

Technically, many jitneys are not informal in the sense that they are fully licensed and certified. In truth, the share of jitney services that are illegal is largely unknown, however the numbers are thought to be appreciable in some areas. Manila's share of illegal "colorum" *jeepneys* is estimated to be as high as 25 percent in some neighborhoods. In Managua, Nicaragua, around 6 percent of microbuses and *camionetas* (trucks with passenger benches in the back) are thought to be unregistered.[7] Twenty to thirty years ago, illegal jitneys were more the rule than the exception in many developing cities of the world. In Caracas, for example, an estimated 3,000 jeeps, sedans, and minibuses, called *carros por puestos,* operated during much of the 1970s as "pirates" along densely traveled routes during peak hours. In 1979, they captured 47 percent of the transit market.[8] They gained popularity for their adaptability, with drivers sometimes altering routes after consulting with passengers either to pick up speed or to avoid congested areas. Today, nearly all *carros por puestos* services are registered and licensed, thus they are not really "informal" when compared to transport in the Dhaka's and Lagos's of the world.

Table 2.3. Comparison of Jeepney–Type Services Among Six Global Cities

City/Mode	Vehicle Type	Propulsion	Vehicle Capacity	Dominant Ownership Pattern
Manila: Jeepney	Converted jeep	ICE (petrol)	10–14	Individual & franchise
Kuala Lumpur: BisMini	Converted van/bus	ICE (diesel)	16	Individual & franchise

Nairobi: Matatus	Pick–up/minibus	ICE (petrol)	16	Individually owned
Kumasi, Ghana: Kumasi	Bedford truck	ICE (diesel)	20	Cooperative
San Juan: Publicos	Sedan, van	ICE (petrol)	6–12	Individual & franchise
Caracas: Carros por Puestos	Sedan, minibus	ICE (petrol)	6–16	Cooperative

Note: ICE = Internal Combustion Engine.

Adapted from: I. Takyi, An Evaluation of Jitney Systems in Developing Countries, *Transportation Quarterly,* vol. 44, no. 1,1990, pp. 163–177.

In the poorest parts of Latin America, the clandestine shared–ride taxi – operated by a free–lancer who squeezes six to seven passengers in a large sedan or station wagon –is often the prevalent form of informal transport (Photo 2.7). A 1986 study of Santo Domingo's 7000 *taxis colectivos,* or *conchos,* found they carried 375,000 passengers a day, or half of all motorized trips.[9] Almost all conchos were owned, driven, and maintained by independents in an artisan style of business. A 1984 study of *colectivos* in Lima, Peru found 91 percent operated informally, the majority of vehicles consisting of 5–passenger sedans (*auto–colectivos*) and 8–passenger station wagons (*camionetas*).[10] Complementing these class–three servies were class–two 10–passenger kombis and 16–passenger minibuses. As in Santo Domingo, Lima's colectivos were operating mainly as one–man businesses.

As reviewed in Chapter Five on Bangkok and Chapter Eight on Brazil, privately owned and operated vans are among the fastest growing fixed–route services. They have proliferated in low–to–middle income cities like Bangkok and Rio de Janeiro, catering mainly to low–wage and sometimes middle–income white– and pink–collar employees who live in the suburbs and work in the central city. Estimates place the number of unlicensed van operators at 8,000–9,000 in Rio de Janeiro and 10,000–15,000 in São Paulo.[11] In Rio, where "clandestine" vans compete head–to–head with buses along popular routes, the estimated 350,000 daily van patrons make up roughly 10 percent of the region's entire mass transit ridership.[12] Surveys show that 95 percent of van customers in Rio are heading to work. Vans in Rio and São Paulo duplicate the routes of franchised buses – benefiting consumers by widening mobility choices, but threatening franchisees by aggressively and sometimes unfairly competing. Independent surveys in three Brazilian cities – Rio de Janeiro, Salvador, and Recife –reveal three–quarters or more of van customers switched over from buses principally because of travel time savings.[13]

Photo 2.7. Illegal sedans, station wagons, and panel trucks queue up alongside a bus in Campina Grande, Brazil, in direct and defiant competition with franchised operators.

(*Photo credit:* J. Oliveira, Jr.)

In Buenos Aires, a myriad of semi–fixed route class–two and three services have sprung onto the scene in the past few years. Argentine officials classify them as "non–regular" in the sense they function as common carriers but operate more as point–to–point shared–ride taxis. Most popular are the 7000–plus quasi–informal shared–ride taxis, called *remises,* that ply the crowded streets of Buenos Aires and its surroundings. Loosely organized as neighborhood cooperatives, remise owner–operators deliver one or more parties of customers to one or more points in the region for around half of what a traditional taxi costs. Outside of the downtown

core, remise cooperatives often lease small shops for dispatching vehicles and handling walk–on customers. Surveys show each remise averages 11 commissioned trips per day with a mean of 2.3 passengers per trip; in total, the 7000 or so remises carry over 120,000 passengers per day in the region.[14] In some suburbs, service densities are very high, recorded at one remise per 21 households. Greater Buenos Aires' fastest–growing forms of mass transit are clandestine vans and minibuses (kombis), which in 1998 numbered over 4000 and carried more than 50,000 passengers daily at a cost that was, on average, 25 percent higher than a bus fare. By the year 2000, the number of illegal kombis had more than quadrupled, posing a serious financial threat to franchised bus companies.

2.1.4 Class Four Modes: Two– and Three–Wheel Motorized Services

Occupying the next–to–lowest rung of informal transport are the taxi–like modes that rely on comparatively slow, light–weight vehicles that provide lower quality services than exclusive–ride taxis, albeit at considerably cheaper fares. In contrast to large vehicle services, class–four carriers generally *complement* rather than *compete* with formal bus and rail systems.

While a true taxi service is "many–to–many" in that it weaves together unlimited numbers of potential origins and destinations, class four and five services follow pathways that are closer to "many–to–few". Often, trips originate at corners where local and collector streets meet major thoroughfares. Major queuing/pick–up points are usually surrounded by shops, street vendors, open–air markets, and kiosks (Photo 2.8). Stereotypically, customers hire vehicles to haul themselves and their groceries to their residences several kilometers away from pick–up points. Mini–vehicles often return to their queuing stations empty once dropping off their customers, though drivers naturally seek out customers when back–hauling. Since people are more willing to walk to shops since they are unburdened by goods, loads are generally lighter for the back–haul portion of the trip, producing some asymmetry in trip loads.

Three–wheelers are the most common forms of class IV services, though two–wheel mopeds and motorcycles, the fastest growing form of informal transport, also fall into this grouping. Below, key attributes of the most common forms of "taxi–like" class IV and V services are outlined.

> ***Three–Wheelers.*** Among the class–four three–wheelers are Manila's *tricycles,* Ho Chi Minh City's *lambrettas,* and Jakarta's *bajaj.* In India's four largest metropolises (Bombay, Calcutta, Delhi, and Madras), three–wheelers make up between 40 percent and 70 percent of all mass transportation transport vehicles (Photo 2.9). Incredibly, some three–wheel scooters, like Dhaka's *auto–tempos,* seat as many as nine passengers. Motorized tri–wheelers tend to be adept and quick–footed in traffic flows, but are also annoyingly noisy and spew plumes of smoke when they accelerate. They can also be frightenly dangerous if a care–free driver is behind the wheel.
>
> ***Motorcycle–Taxis.*** For–hire motorcycles are the most rapidly growing form of informal transport services. Their growing popularity lies in their inherent advantages: door–to–door service capabilities; ability to enter narrow alleyways and footpaths that are inaccessible by any other motorized modes, sometimes even unreachable by three–wheel pedi–cabs; fast speeds, especially in getting a jump on other traffic when a signal turns green; and an agility in traffic streams, along with the ability to navigate around pock–marked and poorly connected streets. From the supply side, high unemployment combined with poor–quality feeder transit services have spurred their numbers.

Photo 2.8. Motorized Scooter at Market Entry in Dalian, China.

Three wheelers lineup for exiting customers outside an major market in Dalian, one of the few Chinese cities that allows three–wheel scooters. Many three–wheelers feed into Dalian's vintage tram network, the largest in Asia.

Photo 2.9. Auto–Rickshaw of Delhi.

Studies show that India's motorized three–wheelers average 2.5 passengers per trip (a load which is exceeded in this photo), average speeds of 27 kilometers per hour, and log around 120 kilometers per day.

Nowhere have motorcycle populations exploded more rapidly than in Asia. Currently, ownership rates exceed 150 motorcycles per 1,000 inhabitants in Taiwan, Thailand, Malaysia, Indonesia, Vietnam, Laos, Cambodia, and India (Photo 2.10).[16] Taipei has the world's highest rate, averaging 335 motorcycles per 1,000 population in 1997, a fact that anyone who has tried to navigate along Taipei's motorcycle–strewn sidewalks well knows.[17] Rising affluence, combined with very high urban densities that severely limit parking and auto–mobility, have created a ready–made market for motorcycle ownership in much of Asia. Among young men and women in their late teens and early twenties, motorcycles are often a stepping stone to eventual car ownership. Most earn enough to get bank loans to purchase a motorcycle. Carrying passengers for a fee becomes a sideline business, a way for owners to cover their monthly loan payments. The desire of young men and women to supplement their income by operating a sideline motorcycle–taxi business has led to over–supply problems in many instances. In Phnom Pehn, where some 125,000 *moto–dub* have gradually replaced the pedicab cyclo, drivers sit in front of hotels, schools, temples, markets, and busy street corners, raising their hands and yelling "Mo–to"? Many wait for hours at a time for customers. Motorcycles have similarly gained popularity as for–hire carriers in Asian cities like Penang, Malaysia and Surabaya, Indonesia because of government–led phase–outs of pedicabs.

As with other fourth–class modes, motorcycles function principally as distributors and feeders. In Lagos, the *okada* has cornered the market of hauling suburbanites from their residences to main bus routes and terminals. In Ouagadougou, Burkina Faso, an estimated two–thirds of all motorized trips are aboard motorcycles, with one–fifth of these comprising commercial, for–hire services.[18] A 1989 survey of the *moto–conchos* two–wheel taxis of Santo Domingo found they handle 25 percent of mass transit trips.[19]

Motorcycle–taxis are arguably the most difficult form of informal transport to regulate. It is impossible for authorities to prove that a passenger is a paying customer, unrelated to the driver. If a police officer charges that a motorcyclist is operating illegally as a commercial carrier, the passenger can easily claim he or she is a friend of the driver and is simply receiving a free lift. Politically, motorcycle–taxis are generally treated more tolerantly than illegal minibuses or pedicabs. Motorcycle–taxis pose less of a threat to public bus companies since they normally function as complementary feeders to mainline routes. Franchise taxi operators also seem to tolerate their two–wheel counterparts since motorcycle patrons tend to be teenagers and those in their twenties who are less inclined to pay high “four–wheel” taxi fares. And whereas pedicabs are viewed as slow–moving, traffic–clogging modes, motorcycles are considered less of a traffic nuisance. For all of these reasons, public authorities often allow motorcycle–taxis to conspicuously congregate on major street corners even though they do so outside the rule of law (Photo 2.11).

Photo 2.10. Motorcycles in Ho Chi Minh City.

Motorcycle and scooters dominate the streets of old Saigon. Many do double–duty as for–hire transport carriers. The now more than two million motorbikes in the city are considered a major factor in the decline of the public bus system and in bicycle use.

2.1.5 Class V Services: Non–motorized Taxi–Like Services

Class V services comprise the most basic forms of informal transport. Because they pose threats from a traffic–flow and public–safety standpoint, yet they also provide vital connectivity for the poor, they are somewhat problematic in terms of normative policy–making. Attempting to rationalize these services invariably raises core and difficult questions of efficiency (i.e., expediting traffic flows) and social justice (i.e., ensuring mobility for the poor). Some trade–off between these two oft–conflicting objectives must be made.

As non–fossil–fuel consuming modes, class–five services depend on animal and human power for their propulsion. Some animal carriers haul comparatively large loads, similar to some class II and III modes, though more common are two–wheel horse–carts, such as Manila’s *calesa* and rural Indonesia’s *dokar,* that carry two to three paying customers (Photo 2.12). The most common form of class V services is the pedal–powered three–wheeler, which in many places was first type of common–carrier to service to appear, preceding the motor–taxi. It goes by many names – *rickshaws* in Bangladesh and India, *cycles* in Cambodia and Vietnam, *pedicabs* in the Philippines, *trishaws* in Singapore and Malaysia, *sai–caa* in Myanmar, and *becaks* in Indonesia. The term used in this report is *pedicab.* As noted, pedicabs distinguish themselves from other forms of informal transport by operating like taxis, providing ubiquitous service (though over a much more limited geographical range). Also, fares are typically negotiated between operators and users before trips commence.

Photo 2.11. For–hire Motorcycles, or Ojeks, of Jakarta, Indonesia.

Ojek operators congregate at a bus stop on a main street in Jakarta, Indonesia, in flagrant violation of traffic laws.

In terms of physical design, there are three major types of pedicab vehicles: (1) one wheel in the front and two at the back, with the passenger seat in the rear (most popular in China, Thailand, Laos, Bangladesh, Nepal, and India); (2) the passenger seat attached to the side of the bike as a sidecar (most popular in Malaysia, the Philippines, and Myanmar); and (3) two wheels in front, where the passenger sits, and one at the back (found mostly in Vietnam and Indonesia). For a detailed description of pedicab varieties, see *Nonmotorized Vehicles in Ten Asian Cities: Trends, Issues, and Policies,* an in–depth study conducted by PADECO Co., Ltd. for the World Bank.[20]

Pedicabs are most prevalent in Asia. Surveys from the early 1980s estimated that *cycle–rickshaws* captured 88 percent of all public transport trips in Kanpur and Agra, India.[21] Today these shares are no doubt lower as motorization rates continue to rocket everywhere, however in Asia's poorest cities, pedicabs remain mainstays of mass mobility. Asia's pedicabs average speeds of 9 km hour (only one–quarter slower than minibuses) and carry customers, on average, for 16 minutes.[22]

Photo 2.12. Dokar Horse–Cart.

A horse with a pom–pom ornament hauls passengers in Bukittinggi in the highlands of West Sumatra, Indonesia. In many small and medium–size Indonesian towns, horse–carts remain a popular traditional form of transportation.

Even recently, pedicabs have begun to surface in other places with large underprivileged populations. Just in the past few years they have appeared on the streets of Havana, owing in part to Cuba's scarcity of oil supplies (Photo 2.13). In Latin America, pedicabs can also be found on the alleys and backroads of Lima, Peru and parts of Mexico. And, of course, they remain popular as a novelty in tourists spots throughout the developed and developing worlds alike.

The degree to which pedicabs operate legitimately or not varies city by city. A study of Agra, India estimated that around two–thirds of cycle–rickshaws operate without a license.[23] The shares are even higher in Delhi,

with 80 to 85 percent of cycle–rickshaws operating without proper papers: the estimated number of passenger–carrying rickshaws in 12 zones under the Municipal Committee of Delhi (MCD) is 250,00 to 300,00 against a licensed number 45,800.[24] In contrast, over 90 percent of Phnom Penh's cyclos are registered. As long as pedicabs stay on the narrow alley ways and decrepit streets of squatter settlements, authorities usually allow them to operate without reprisal. It is only when they spill onto streets crowded with faster moving motor vehicles that governments start to crack down.

Photo 2.13. Pedicab Along Havana's Waterfront.

High unemployment and limited fuel supplies have spawn bicycle–taxi services. The prospect of collecting U.S. dollars has prompted some operators to concentrate services on Havana's waterfront in hopes of luring foreign tourists. The absence of much motorized traffic on the streets of Havana has meant the city's pedicabs have faced minimal local opposition. (*Photo credit:* B. Hadenfeldt)

The densest concentration of pedicabs anywhere is in Dhaka, Bangladesh (Photo 2.14). With a population of around 4 million, Dhaka has some 300,000 *cycle–rickshaws* which, according to latest available estimates, handle 19 percent of all person trips. Only around of third of Dhaka's rickshaws are officially licensed. The number of cycle–rickshaws in all of Bangladesh is rising and it is estimated that in the year 2000 there will be more than 1.25 million nationwide. Also prominent is Lucknow India, where estimates show pedicabs account for 15 percent of all person trips.

Pedicabs, it is important to note, are versatile modes. In much of the developing world, they are used for more than just carrying shoppers to markets, kids to school, or workers to bus depots. Notably, they are among the fastest, most dependable means of hauling raw materials, goods, groceries, bottled water, and other commercial items door to door. In Haiti, all–terrain bicycles equipped with side–stretchers are used as ambulance vehicles, and have been credited with reducing the time it takes to transport patients from homes to hospitals in remote villages by as much as 30 percent.

In today's era of rapid motorization, pedicabs are often viewed as primitive means of transportation suited only for poor, backwards countries, which few places want to be perceived as, whether they are or not. Most large cities have banned them, claiming slow–moving vehicles tie up traffic and pose safety threats. In the late 1980s, Jakarta officials confiscated over 100,000 *becaks* within the city's boundaries and tossed a third of them into the Java Sea, purportedly to help create a breakwater. In 1995, when Vietnam was admitted to the South East Asian Nations (ASEAN), central Hanoi and Ho Chi Minh City were placed off limits to *cyclos.* Even the world's most pedicab–dependent city, Dhaka, has announced plans to completely ban them on safety grounds, despite the fact that they employ more than 100,000 people.

Photo 2.14. Cycle–Rickshaws of Dhaka, Bangladesh.

An estimated three–quarters of Dhaka residents cannot afford to pay for any type of transportation and get around mainly by foot. Those who can afford pay small amounts to travel by cycle–rickshaw. Besides providing the major means of mechanized travel in the city, Dhaka's cycle–rickshaw sector generates jobs for some 400,000 individuals.

2.2 The Supply Side: Operations and Operators

The informal transport sector absorbs a considerable share of the labor surplus that beleaguers many large cities of the developing world. In many instances, the supply of unskilled men in their twenties who are willing to drive vehicles for meager earnings far outstrips both demand and the availability of equipment. Oversupply breeds over–competition, and all the negative externalities that go with it.

This section draws on various studies that have surveyed the operators of informal transport services. More details are provided by the case studies presented in this report, found in Chapters Four through Eight.

2.2.1 Working Environment

Most unskilled labor in the developing world is physically demanding, and the informal transport sector is no exception. Few jobs are as difficult and physically taxing as pedaling a three–wheeler. Worldwide, most pedicab drivers work 70 to 80 hours per week, rarely with a day off, in a highly competitive and stressful environment. Time spent pedaling a three–wheel taxi seems as related to migrant status as it is to capital ownership. Surveys in Phnom Penh reveal migrant *cyclo* operators work seven days a week for months at a time, dictated mainly by the income needs of their households, before returning to the countryside for a rest period before repeating the cycle.[29]

Those pedaling for a living are exposed to some of the worst elements of cities: they are continuously subjected to the dangers of congested traffic and must be prepared to stop instantly when abruptly cut off; drivers exert tremendous energies, and thus must breathe heavily in highly polluted settings; and as among the least empowered members of society, those operating illegally are vulnerable to the whims and dictates of bribe–seeking public officials. Because of the strenuous work, many pedicab operators get sick or injured frequently, yet because they depend on daily receipts to get by, most continue to work even when they should be home resting in bed.

While the work is less strenuous, drivers of motorized vehicles also put in long days, working 10 to 12 hours, six to seven days a week, to make ends work.[30] One thing that appears to be universal is the understandable desire among informal transport workers to one–day move on to a better job. Interviews with drivers the world over – whether in Bandung, Indonesia, Kingston, Jamaica, Phnom Penh, Cambodia, or Yol, Nigeria –show this to be the case. Drivers often say they toil in this line of work in hopes that their children will not have to.

2.2.2 Operating Characteristics

From an operational standpoint, informal services are generally divided into those that function mainly as feeders over short distances and those that provide longer haul, mainline connections. Taxi–like, small vehicles dominate the former while route–based, 12–to–24 seaters characterize the latter. Even within

classes, however, functional roles vary. Commercial vans tend to be specialized, operating mainly as peak–period commuter services. In Bangkok, for instance, vans log most of their kilometers on freeways as express services between residential suburbs and city terminuses. Their travel patterns are few–to–one. In contrast, minibuses tend to be all–day, non–express carriers that serve multiple origins and destinations along a corridor.

One general rule is that the smaller the vehicle, the more limited the geographic coverage. In Metro Manila, for example, around 65 percent of bus trips are over 7.5 kilometers in length while an equal share of jeepney (minibus) trips are under 5 kilometers in length.[31] There are also sharp contrasts in rates of passenger throughputs. In Jakarta, the average number of passengers per kilometer of service is 1.5 for human–powered becaks, 4 for three–wheel bajajs, and 7 for bemo micro–vans. On a daily basis, passenger loads in Bangkok vary from 44 on hired motorcycles, 60 on silors (small Daihatsu or Suzuki pickups), 520 on minibuses, and 1,300 on conventional buses.[32]

Table 2.4 further compares service consumption levels among major forms of informal transport based on experiences in Bangkok and Vadodara, India. The table shows that bigger vehicles average fewer tours per day albeit with higher passenger loads. This results in average daily patronage levels that are not orders–of–magnitude different between very small carriers and larger ones. Vadodara's motorized tri–wheelers actually handle around a third more passenger trips per day than Bangkok's express vans. Adjusted for longer average trip distances, however, Bangkok's vans average far more passenger–kilometers of service than Vadodara's three–wheelers.

2.2.3 Operator Profiles

Informal transport operators are usually, though not always, among the most underprivileged members of societies. Most are unskilled and minimally educated. Virtually all are men with wives and kids. As detailed latter in this report, most pedicab, motorized–tricycle, and microbus operators in Manila, Bangkok, Jakarta, Kingston, and Rio de Janeiro support entire families with their often meager earnings.

Worldwide, the same pattern holds on the origins and socio–demographic backgrounds of informal transport drivers, conductors, and touts. The overwhelming majority arrive in big cities from the rural countryside hoping to do better for themselves and their extended families. Yet they have neither the technical skills or the educational qualifications to compete in the highly competitive job market of the formal economy. Informal employment is all that is left. Few have any access to capital.

Pedicab Operators

Among all informal transport operators, pedicab drivers are usually the least educated and formally trained. Illiteracy rates are fairly high. In the view of one public official interviewed in Manila, pedicab drivers are "at the bottom of the food chain of the informal transport sector". One study found that cycle–rickshaw drivers of India spend 80 percent of their earnings on food alone.[33] An estimated 25 percent of the country's rickshaw operators are pavement dwellers.[34]

Pedicab drivers span across all ages. Studies in Agra, Jaipur, Faridabad, and Delhi found most cycle–rickshaw drivers are in their thirties.[35] A survey of cyclo operators in Phnom Penh found an average age of 39 years.[36] In suburban Bangkok, most are in their forties. In Manila's Chinatown, several are in their mid–sixties. Since Shanghai ceased issuing new licenses for three–wheeled–pedicabs, the average age of drivers now exceeds 75, with city officials evidently hoping the sub–sector will eventually die out on its own.[37] Reputedly the oldest known pedicab operator is one Mr. Luu Duc of Hanoi, Vietnam, who at 95 years of age, dutifully drives his tri–shaw each day, despite the best efforts of his children, most in their seventies, to get him to retire.[38]

Table 2.4. Comparison of Service Consumption Levels Among Informal Transport Modes, Bangkok and Vadodara, 1992 to 1997

	Average Number of Trips per Day	Average Number of Passengers Carried per Day	Average Number of Passengers per Vehicle Trip
Hired Motorcycles			
Bangkok (1992)	33	44	1.3

Motorized Three−Wheeler			
Vadodara, India (1996)	34	90	2.9
Vans			
Bangkok (1997)	5	60	12.0
Minibus			
Vadodara, India (1996)	8	60	10.0

Sources: D. Babu, Role of Intermediate Public Transport System in a Large Size Urban Area, *Urban Transport Policy,* J. Freeman and S. Jamet, eds., Rotterdam, Balkema, 1998, pp. 469−473; S. Prayochvnich, A Study of the Appropriateness of Transportation by Using Hired−Motorcycle Service in Metropolitan Bangkok, Chulalongkorn University, Department of Urban and Regional Planning, unpublished master's thesis, 1992; PlanPro Corporation, Ltd., The Final Report of the Study in Mass Van Transit, Bangkok Metropolitan Administration, 1998.

A comparative study in the early 1980s found that between 77 percent and 81 percent of Indonesia *becak* drivers had no higher than primacy schooling.[39] Data from 1999, presented in Chapter Six, reveal these numbers have not changed much. A 1992 survey found around half of Phnom Penh's cyclo pedalers to be illiterate.[40] Manila's pedicab drivers have considerably more educational training than their Indonesian and Cambodian counterparts, however this does not translate into higher rates of vehicle ownership or higher earnings.

Motorcycle−Taxi Operators

Hired−motorcycle operators tend to be younger, better educated, and financially better off than their pedicab counterparts. Table 2.5 summarizes various socio−demographic characteristics of motorcycle−taxi operators, drawn from several studies. Virtually all are male and almost half are married. Most are in their twenties. Jakarta's *ojek* drivers tend to be older, in their thirties.

Many taxi−motorcyclists are rural migrants. In both Yola and Jakarta, approximately half had previously lived in a different region of their respective country. Many Nigerians had no job before becoming a motorcycle−taxi operator. While larger shares of Jakarta's ojek drivers previously worked, often this was as subsistence farmers. Three−quarters of Yola's hired−motorcycle operators worked on a full−time basis. Jakarta had higher shares of part−timers. While daily earnings were below citywide averages in all three places, taxi−motorcyclists in Bangkok generally netted twice as much as pedicab drivers. In the case of Jakarta, driving an ojek was most remunerative in the core city.

Minibus and Jitney Operators

Quite a variety is found in the socio−economic standings and backgrounds of the world's minibus and jitney operators. For example, Instanbul's *dolmus* drivers come from the ranks of lower middle class, and many live a reasonably comfortable lifestyle by Turkish standards. Most have the expectation of one day drawing a pension. By contrast, most mini− and microbus operators in sub−Saharan Africa come from the very poorest segments of society. While most of Manila's jeepney operators have completed secondary education, few of Kingston, Jamaica's illegal "robot" operators can lay such claim.

Not everyone is cut out for the life of a minibus operator. As noted below, job turnover rates are high in most areas, with the majority of drivers having worked for less than a year in the business. In highly competitive settings, such as Kingston and Nairobi, the ideal temperament for minibus work is someone who likes social interaction and high−adrenalin work.

2.2.4 Source of Jobs

Informal transport labor comes predominantly from recent rural migrants. This holds not only for pedicab and motorcycle−taxi operators, as previously shown, but also for microbus and minibus operators as well as their on−board helpers (i.e., conductors and touts). The informal transport sector is generally very receptive to new labor market entrants, absorbing idle men in their twenties and thirties who are either unemployed or in lower

paying formal–sector jobs. Surveys in Kingston, Jamaica, reveal that 12 percent of minibus drivers and 20 percent of conductors were unemployed three years earlier.[41] Shares are even higher in sub–Saharan Africa.

Table 2.5. Comparison of Hired–Motorcycle Operator Characteristics: Yola, Nigeria, Bangkok, Thailand, and Jakarta, Indonesia, 1992 to 1999

	Yola Nigeria (1993)	Bangkok Thailand (1992)	Jakarta Indonesia (1999)
Demographics:			
Male, %	100	99	100
Married, %	45.9	48.4	43.5
Age, mean	21.5	27	32.4
Education, %:			
No formal	47.1	3.5	11.4
Primary	15.3	48.6	30.6
Secondary +	37.6	47.9	58
Birthplace same region, %	55.2	35.5	50.2
Household size: mean persons/household	–	–	3.1
Employment situation:			
Previous status unemployed, %	74.1	–	14.0
Years working, mean	–	1.4	6.3
Part–time, %	24.8	18	33.3
Hrs. work/day, mean	10	11	9
Avg. Trips per day	–	33	–
Daily earnings, US$ (1999)	7	6	4

Sources: A. Ogunsanya and M. Galtima, Motorcycle in Public Passenger Transport in Nigeria: Case Study of Yola Town, *Passenger Transport in Nigeria,* Ibadan, Heinemann Educational Books, 1993, pp. 190–207; S. Prayochvnich, A Study of the Appropriateness of Transportation by Using Hired–Motorcycle Service in Metropolitan Bangkok, Chulalongkorn University, Department of Urban and Regional Planning, unpublished master's thesis, 1992; primary research and field surveys conducted in Jakarta, October 1999.

Absorbing surplus labor from the countryside is not a positive feature of informal transport in the minds of many. A tacit reason why pedicabs have been banned from many mega–cities is the belief that they stimulate the influx of unskilled people into already overcrowded cities.

2.2.5 Work Duration

Studies of pedicab and minibus operators in Asian cities have found that most stay with the work for relatively long periods of time, suggesting that informal transport is a gainful–enough occupation. In some areas, the duration of work as an informal transport operator is fairly bifurcated. In Jamaica, for instance, around 45 percent of minibus operators end up working only for six months, however another 45 percent work in the business for over 5 years. This suggests some degree of upward mobility –e.g., the ability to increase earnings and eventually acquire a vehicle – among those who stick with the business.

Those who make a career out of driving a three–wheeler or jitney must be "thick–skinned", able to deal with tremendous amounts of stress and abuse on a daily basis. Risk–takers and Type–A personalities are best able to survive in the "dog–eat–dog" world of highly competitive informal services. Law–abiding operators are usually the first to leave the business, both out of necessity (i.e., minimal earnings) and choice (i.e., minimal tolerance). Thus, in almost a Darwinian sense, it tends to be the least disciplinary operators and

troublemakers who stay around, a fact that only heightens the problems attributed to the sector, notably traffic congestion and road accidents.

2.2.6 Vehicle Ownership Patterns

Vehicle ownership patterns vary considerably by country, however in very poor countries, the vast majority of drivers are too poor to own vehicles and thus must rent them. In Thailand and Brazil, virtually all motorcycle–taxi and commercial vans are owned, operated, and maintained by a single, often very hard–working, individual. These "one–man" enterprises have no overhead, nor any labor–related expenses for health insurance, worker's compensation insurance, or retirement benefits. In contrast, the shares of micro–vehicle drivers (i.e., pedicab and motorized tri–wheelers) who own their vehicles is only 15 percent in Jakarta, Bandung, and Yogyakarta and under 10 percent in Manila.[42] Among those fortunate enough to own vans or minibuses, almost without exception vehicles were purchased second– and third–hand. Africa's informal transport sector has become a dumping grounds for beat–up, smoke–belching used cars and vans from Europe and Japan. A study of second–hand microbuses in Bolivia found that when their high maintenance costs and poor fuel economies are taken into account, they actually cost more to operate on a per kilometer basis than newly purchased microbuses.[43]

As fairly inexpensive vehicles, one might expect that pedicabs are largely owned by drivers. This, however, tends to be more the exception than the rule in the world's most populous third–world countries. Only 20 percent of pedicab operators in India and Bangladesh own their vehicles.[44] The inability to save earnings because they must feed and shelter themselves and their families prevents many pedicab drivers from ever accumulating any substantial assets. Similarly, studies show relatively few pedicab drivers in Thailand, Cambodia, or Vietnam own the bicycles they pedal. Instead, they pay daily rents that reduce net earnings by one–quarter or more. Typically, pedicabs are rented from owners whose primary earnings are from vehicle leasing – in the case of Bandung, Indonesia, for instance, half of all becak lessors owned between 10 and 30 vehicles.[45]

The situation is much different in Latin America where most informal operators are also vehicle owners. Most of Mexico City's Volkswagon beetle–taxis, *peseros* microbuses, and *colectivos* minibuses are individually owned and operated. Owner–operators, however, tend to make full use of their assets' income–generating potential. Most drive during the lucrative morning and afternoon shifts, and lease their vehicles to independents seeking to supplement their day wages in the evening.

Under most lease arrangements, drivers pay a set daily fee (usually equivalent to around 20 to 25 percent of gross daily in–take) and cover all other day–to–day expenses (mainly fueling the vehicle, minor maintenance, and paying off enforcement officers). Rarer are situations where owners bear all financial responsibilities and either pay drivers pre–set salaries or else fold these costs into daily lease rates.

2.2.7 Earnings

The fact that many informal operators stick with the business suggests, on balance, earnings are enough to make ends meet.[46] However, net returns vary sharply between and within cities due to differentials in rates of vehicle ownership as well as in levels of competition and affordability of fares to low–income populations.

Experiences in Indonesian and Indian cities, along with the case–study cities (i.e., Bangkok and Manila) reviewed latter in this study, reveal that pedicab drivers take home the least amount of pay each day. A study of Bandung, Indonesia's *becak* drivers found that they averaged just $1.13 to $1.88 per day (in 1982 U.S. currency), earning "barely enough" to make ends meet. Because of these thread–bare earnings, over 70 percent of Bandung's becak drivers were very dissatisfied with their strenuous work. Still, 37 percent of surveyed drivers yearned to one–day own their own becak to improve their financial position. A more recent survey suggests the life of *a* hard–working pedicab operator can be more remunerative than that of a factory worker. The study found that *becak* operators on the outskirts of Jakarta were making two–and–a–half times as much per day as those toiling longer hours in assembly line sweat shops making sports sneakers.[47]

Motorcycle drivers earn about two to three times as much each day as pedicab operators, while also working a third fewer hours. Even in saturated markets like Phnom Penh, *moto–dub* operators can bring in around US$ 2 a day for five or six hours of work. As reviewed in Chapter Four, Bangkok's motorcycle–taxi operators net around US$ 3 per day, albeit for longer hours of work.

A general pattern seems to be that larger vehicles (and thus larger loads of fare–paying passengers) bring with them higher net earnings. In Indonesian cities, for example, microbus (e.g., 7–seat *bemo,* 7–seat *mebea,*

and 5–seat *angguna vans)* operators average over twice as much each day as *becak* operators, and minibus operators (e.g., 12–seat *mikrolet,* 14–seat *kolt,* and 17–seat *opelet)* bring in more than their small–vehicle counterparts.[48] As discussed in Chapter Eight, Brazil's clandestine van business is highly remunerative by global standards, with owner–operators making considerably more than the vast majority of their customers (most of whom earn low–to–middle income wages) and often twice as much as legitimate bus drivers make. Those driving bigger vehicles are not doing well in all cases. San Juan, Puerto Rico's jitney *(público)* operators eke out a modest existence from 9 to 10 hours of work per day, earning between US$ 150 and US$ 240 per week (in 1995 currency) after expenses, a income that places them in the lowest quintile of earnings among Puerto Rican workers.[49]

The economics of pedicab, motorized tricycle, and jitney services in Bangkok, Manila, and Jakarta are detailed in Chapters Four through Six. From the survey of 72 becak pedicab and ojek motorcycle operators in Jakarta, a statistical model was estimated that explained monthly net earnings as a function of hours of work, type of mode, and location of service, controlling for other factors. (See the Technical Appendix to Chapter Six for details on the model.) Figure 2.1 plots the estimated net monthly earnings across different combinations of variables based on the model outputs. Taxi–motorcyclists averaged considerably higher earnings – roughly twice as much in urban markets and four times as much in suburban markets. The results show that among operators putting in 10 hours a day, in suburban markets ojek drivers average around US$ 85 in net monthly earnings compared to around US$ 25 for becak operators. Within the core city, ojek drivers typically net US$ 130 per month, twice what in–city becak drivers earn. The income advantages enjoyed by ojek drivers reflect not only higher patronage levels, but also the fact virtually all own their vehicles whereas the vast majority of becak drivers pay daily lease fees. Also, because they are unregistered, ojek drivers avoid paying registration and licensing fees, expenses that formally registered becak drivers incur.

Insights into the economics of paratransit services also come from a recent study of *colectivo* minibus services in Mexico City.[50] In 1994 (just prior to the devaluation of the Mexican peso), it cost about US$ 0.70 per kilometer to operate a *colectivo,* yielding around $0.22 in driver earnings per kilometer. Colectivo owner–operators netted, on average, around US$ 250 in weekly income, about twice as much as lease–operators earned. These earnings compared closely to what public bus operators made in Mexico City, however private operators received no benefits and had less job security. These earnings enabled colectivo owner–operators to achieve some semblance of a low–to–middle class lifestyle in Mexico's capital city. Since many lease–operators worked as colectivo drivers part time, their full earnings placed them at a similar income stature.

2.3 The Demand Side

A core market feature of entrepreneurial, informal transport is *service–price differentiation.* In general, the sector is dichotomized as follows. Large–vehicle services, like vans and minibuses, tend to focus on long–haul commuter markets, serving semi–skilled and professional–class workers. Services often parallel formal bus routes, providing higher–quality connectivity (e.g., guaranteed seat, faster speeds) for a higher fare. In contrast, micro–vehicle services, like motorcycle–taxis and pedicabs, function more as complementary, feeder connectors, catering to lower–income, marginally–skilled individuals, many of whom work in the informal economy themselves. There are some exceptions to this generalization, notably in India where cycle–rickshaws are patronized predominantly by the middle class because of high fares per–kilometer. Class–three micro–buses and station–wagons function as hybrids, often serving markets that span between big–vehicle and two–to–three wheel services.

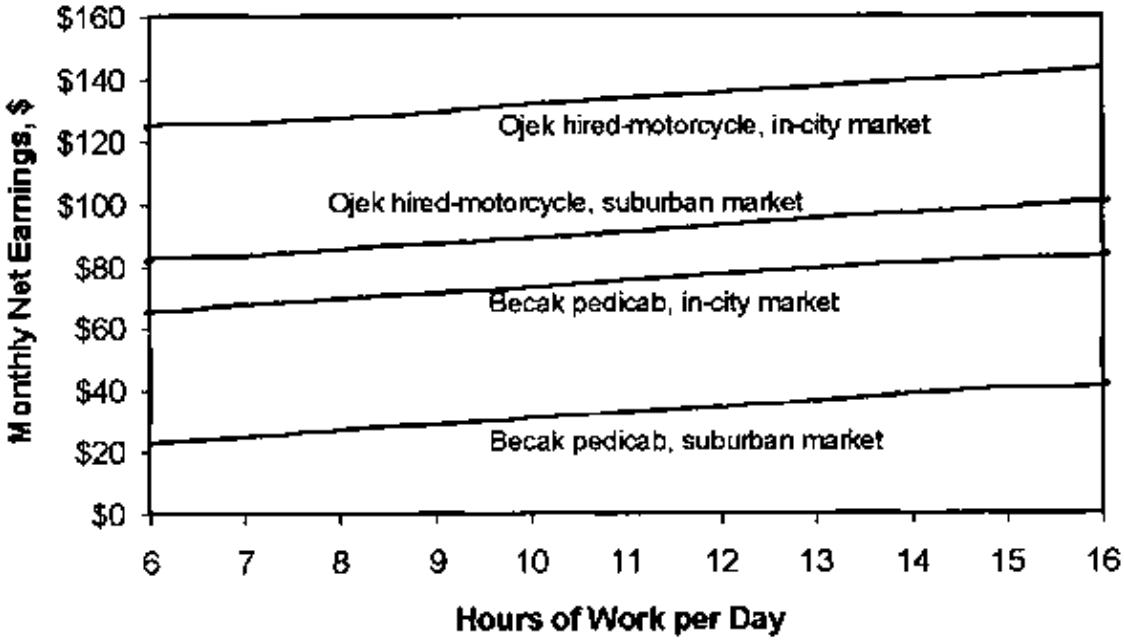

Figure 2.1. Comparison of Monthly Net Earnings Among Pedicab and Hired Motorcycle Operators in Urban and Suburban Markets of Jakarta, Indonesia, 1999

The best statistics on market shares of services captured by informal operators come from Asia. There, second– and third–class vehicles providing "collective" and "shared–ride" services (e.g., jitneys, micro–buses) have historically served from 5 to 10 percent of all trips in India and Thailand to as many as half of all trips in the Philippines.[51] Non–motorized (e.g., individual–ride pedicab) services that are not banned handle as few as a one or so percent of all trips in Hanoi and Metro Manila, to as high as three–quarters of all trips in Dhaka, Bangladesh and poor Indian cities like Kanpur, Jaipur, and Patna.

Where both engine–powered and pedal–powered tri–wheelers are found, motorized travel usually wins out. In Manila and India, motorized three–wheelers average twice as many passenger trips per day as do pedicabs. Bangkok's three–wheeler *tuk–tuk* similarly average twice the number of trips per day as do hired–motorcycles.

In the case of informal route–based services, the highest market shares are found in sub–Saharan Africa. Over half of all passenger trips in Lagos are aboard private micro–buses, minibuses, and panel trucks, collectively called *kabu–kabu.*[52]The counterpart to these services in Nairobi, called *matatus,* carry an estimated 70 percent of passenger trips.[53] By comparison, minibus and other class–two services have lost market shares in most of Latin America where motorization rates have risen sharply in the past two decades. The one exception is unlicensed, express vans which have in recent years grabbed an increasing share of commute trips in large Brazilian cities.

2.3.1 User Profiles

Those who patronize informal transport services tend to have similar socio–economic backgrounds as operators, though there is greater variation in customer make–up. As with informal transport operators, many patrons once lived in rural areas and the countryside where they customarily used non–traditional services. Rural migrants often prefer informal, small–vehicle services because of friendships built with drivers through extended patronage, which enables them to occasionally hitch free rides when low on cash or barter fresh produce in exchange for lifts.

Gender

Perhaps the major difference between informal transport operators versus users is that while the former are virtually always men, the latter tends to be women. Women frequently patronize non–motorized modes because of their traditional domestic roles of shopping and maintaining the household. Pedicab use is skewed toward women making short trips to markets and retail centers. Women often prefer pedicabs to motorbike–taxis and microbuses not only because they can carry more groceries and goods on board but also because they are perceived as being safer.

A 1997 study found that 35 percent of Dhaka's female commuters relied on cycle rickshaws to get to work, with another 6 percent using them in combination with buses and scooters.[54] A quarter of women heading to schools and colleges also relied on rickshaws. This affinity toward rickshaws stems, in part, from the Islamic practice of *purdah,* or the social exclusion of women, that in Muslim cities like Dhaka frowns on women sharing crowded buses with mainly male riders.[55] Thus, the government of Bangladesh's campaign of phasing out cycle rickshaws, if successful, will remove an important source of mobility for women.

In Africa, where few pedicab services exist, women often turn to motorbike–taxis and minibuses instead. Surveys, cited in Chapter Nine, show women make up over 70 percent of motorbike–taxi patrons in Niger and a majority of matatus patrons in Nairobi.

In Bangkok, where pedicabs have been banished to just a handful of residential suburbs, women likewise patronize motorcycle–taxis and commercial vans more then men.

Socio–Economic Standing

The few survey results available suggest most who ride informal transport services are generally of low–income with few mobility options. This is mainly so for users of pedicabs, motorized three–wheelers, and other modes that are relatively slow and perceived as being hazardous. In very poor countries, like India and Bangladesh, even these modes are too expensive for most of the poor whose only real mobility option is their own two feet. Faster modes, like motorcycle–taxis and commercial vans, often serve educated, professional class people. In Bangkok and Manila, significant shares of minibus, commercial van, and jitney patrons are professionals, many with trained skills and middle–class earnings. About half of Bangkok's express van riders are high–school or college students from middle–income households.[56] Latin American cities similarly draw middle–class customers, some of whom have cars available. A survey of "clandestine" van customers in Rio de Janeiro found that 38 percent had university degrees and 67 percent earned above minimum wages.[57] This contrasts with Africa and the Indian subcontinent where consumers of informal transport services come primarily from lower income classes. In cities like Kanpur, Dacca, and Ouagadougou, many patrons work themselves in the informal economy, whether as street vendors, refuse collectors, or day laborers.

Age Profiles

Surveys from several countries reveal some general age patterns among informal–transport customers. Motorcycle–txis generally draw from a younger crowd. Pedicab users tend to be considerably older. Surveys revealed the average age of cyclo riders in Phnom Penh of 39 years.[58] In many Asian cities, those in their 70s and 80s regularly catch pedicabs, cycle–rickshaws, and becaks. Larger informal carriers like vans and minibuses tend to carry a wider age mix of passengers, many being college–age and in the thirties. The elderly do not patronize long–haul carriers very often. A survey of Brazil's clandestine van riders found fewer than one percent in Rio de Janeiro and São Paulo were over fifty years of age.[59]

2.3.2 Trip Characteristics

Trips made aboard informal carriers are not unlike those made via any other form of transportation. Variations occur as much between modes of informal transport as they do between informal and formal systems.

Trip Purpose

Informal transport is mainly used for non–work purposes, such as traveling to and from marketplaces and medical clinics. The primary exception is informal (class–two) minibuses, jitneys, and vans which, as express carriers, tend to serve commuters. While passenger services are their bread–and–butter market, some modes do double–duty as goods carriers, usually on a for–hire, contract basis.

As noted earlier, informal services tend to capture "niche markets". For small carriers, the primary niche is access to mainline services – i.e., feeder connections between neighborhoods and bus and metro trunk–lines. In Manila, an estimated two–thirds of motorized tricycle trips involve a connection to a jeepney, bus, or light rail transit route. At suburban metro stations in Mexico City, around ten times as many people access rail stations via *peseros* microbuses and *colectivo* minibuses as they do by walking.[60] Even 70 percent of express van trips in Bangkok involve an inter–modal transfer, the most common being a connection to a formal bus route.[61]

There tends to be asymmetry in the usage of informal transport for retail–shopping trips. Often, patrons (mostly women) will walk or take a bus to the market because they are not burdened by goods. Avoiding a

motorcycle or pedicab fare saves money for shopping. It is upon the return, with sacks of groceries and consumer purchases in hand, that people are mostly likely to hail a pedicab, jitney, or minivan for the ride home. The one–way nature of travel demand prompts some drivers to charge higher rates for market–to–residence trips. And when back–hauling to their queuing area, many will try to hawk pedestrians for rides, offering relatively cheap fares. This practice tends to smooth out the asymmetry in travel demand between residences and commercial districts.

Geography largely accounts for differences in trip purposes aboard pedicabs. In most Indonesian cities, becaks are mainly used for reaching shops. Yogyakarta, a tourist destination in central Java, is an exception. There, becaks are used principally for recreational and touring purposes. In India, cycle–rickshaws are used frequently to ferry children to and from school. In very poor countries, like Haiti and Uganda, rural bicycle–taxis haul people and goods for virtually every conceivable purpose, including medical emergencies.

Trip Distances

Trip distance generally increase with vehicle size and average speeds. Studies show non–motorized modes, like pedicabs and horse–drawn carts, typically average trips in the 1 to 2 kilometer range. In Manila, three–wheel motorized tricycles average trip distances roughly twice as far as pedicabs (e.g., 2–4 kilometer range) and jeepney services average distance twice as long as tricycles (6–8 kilometers).[62] Similar distance differentials exist among Jakarta's hierarchy of carriers. The fact that services are so spatially differentiated reflects the inherent market responsiveness of entrepreneurial transportation services.

2.4 Market Interactions and Performance

The interaction of informal transport supply and demand produces some semblance of market equilibrium. More accurately, however, the sector is always in some state of partial equilibrium owing to its dynamic, ever–changing nature. Nevertheless, semi–equilibrium brings with it outcomes, reflected in factors like levels of competition, tariff systems, user likes and dislikes, traffic congestion, and accident rates. Experiences in these areas are reviewed in this section.

2.4.1 Competition

Competition is universally high in settings with truly informal transport services. The downside of this is a worsening of traffic congestion while the upside is greater market–responsiveness. Unencumbered by rules and bureaucratic hurdles, informal operators tend to be highly sensitive to emerging and shifting market trends, much more so than public operators. In Kingston, Jamaica, for instance, private entrepreneurs have begun operating express, premium minibus services, complete with morning coffee, pastries, and newspapers. These services have been a huge success, and all agree would never have been mounted by cash–strapped public bus operators. The inherent flexibility and profit–seeking motives of independent services means greater responsiveness and adeptness (e.g., times of operations; degree of route deviation) to changing market conditions.

Few good indexes exist for gauging how much more competitive the urban transport marketplace is with informal services and whether, on balance, the outcomes are socially optimal. The fact that public authorities often acquiesce to their existence suggests, on balance, the benefits of competition are perceived to exceed the costs. And where bans and crackdowns have occurred, competition has generally been excessive and harmful.

What can be said with a degree of certainty is that hyper–competition hurts public bus companies financially. This is especially the case where high–quality private vans compete head–to–head with fixed–route buses, as has been the case in both Bangkok, Manila, and Rio de Janeiro (reviewed in Chapters Five, Six, and Seven, respectively). In Rio, surveys show that 64 percent of van customers previously commuted by bus. Because van operators carry customers at a profit while buses operate in the red, a prudent course of action would be for public bus companies to scale back services accordingly – effectively shedding some of their deficits. To blame the informal transport sector for financial losses is a bit unfair; problems arise because of the unwillingness of protected transit companies to downsize and relinquish market share, or else change business–as–usual.

2.4.2 Tariffs

Price structures for informal services tend to be similar across the globe. Fares are mostly fixed for route–based (e.g., class II and III minibus and microbus) services and variable for taxi–like (e.g., class IV and V three–wheeler and pedicab) services. While pedicab trips usually costs less than other modes, on a per kilometer basis they are among the most expensive.[63] However, since pedicabs are mainly used by two passengers, splitting the cost often results in a cheaper per passenger fare.

For most taxi–like, door–to–door services, fares are usually negotiated, with drivers proffering a charge based on experience and intuition. In Indonesia, pedicab (*becak*) and motorized three–wheeler (*bajaj* and *helicak*) services are sometimes also adjusted based on the "condition and appearance" of the passenger.[64] Usually additional fees are charged to customers hauling goods and livestock. Differentiated pricing is also seen as weather and road conditions change. In rural Bangladesh, for instance, passenger rickshaws and rickshaw van services adjust fares to reflect actual time and energy inputs of the pullers as affected by road roughness conditions.[65]

Fare regimes often vary by market segments and, as if in recognition of Ramsey's discriminatory pricing principles, the perceived price sensitivities of customers.[66] A study of Malaysia's *trishaw* industry found that different rate structures were charged to regular customers (lowest), casual customers, goods, prostitute runs, and tourists (highest).[67] In much of southeast Asia fares rise during monsoon season and particularly periods of heavy downpours.

Many intermediate–size carriers charge stage fares, usually with price steps that decline with distance. Fixed–route informal services tend to be costlier than bus rides due to better quality service – on–time and dependable, more comfortable and guaranteed seating, and faster operating speeds. In Porto Alegre, Brazil, for instance, clandestine vans charge around twice as much as conventional buses for trips over comparable distances, and in Rio de Janeiro prices are sometimes four to five times as high.[68]

Market–based pricing is efficient, however in the developing world it raises equity concerns. Paratransit fares can be burdensome to the very poorest members of society. In Mexico City, each trip aboard a *peseros* microbus consumes 5 to 10 percent of the average daily wage of an unskilled worker; with many of the region's poor live on the periphery making (and paying for) as many as five paratransit trips per day, commuting costs can consume a quarter or more of a day's salary.[69] The use of distance–based fares in Brazilian and other Latin American cities places the greatest financial burdens on low–wage–earners since most live in favelas and barrios on the edges of metropolitan areas.

2.4.3 User Satisfaction

Consumer attitudes are among the best barometers of how well informal transport services perform. In the absence of much recorded data on services and patronage, finding out what users think about pedicab, motorcycle, and minibus rides is the next best thing.

User surveys reviewed in Chapters Four through Nine reveal that informal services are often prized for their swiftness and flexibility. The ability of pedicabs, motorcycles, and three–wheelers to nudge through traffic jams is what riders like best. Many micro–vehicle users enjoy the comradery and friendliness of being in closer quarters. In tropical settings, the smaller vehicle also gives better ventilation.

Preferences for informal services sometimes have as much to do with the poorness of formal ones as anything. Surveys in India found many people opted for cycle rickshaws because, compared to their alternative, public transport, they are more affordable and reliable. Surveys of van customers in Brazil reveal the main reasons vans are preferred over conventional buses are "speed advantages" (44 percent of respondents) and "levels of comfort" (25 percent of respondents).[70] By one account, the "non–corporate" transport sector "better satisfy the needs of consumers than modern, heavily regulated systems of cities in the advanced capitalist countries".[71]

Informal transport services nevertheless get bad marks, mainly in terms of safety. Motorcycles and microbuses operated at breakneck speeds received the poorest marks among customers in Bangkok. Two–thirds of surveyed motorbike riders in Nigeria felt that services were unsafe.[72] Where rules and regulations are lax or unenforced, informal services get criticized for being undependable.

2.4.4 Congestion Impacts

Informal transport services are widely viewed as major culprits behind traffic gridlock in the third world. Evidence of this, however, is scarce and built mainly on anecdotes and press coverage. This is an area

where, quite simply, more research is needed.

Overall, informal carriers are efficient users of road space, however these benefits are partly offset, and some contend totally negated, by their operational characteristics – e.g., slow and erratic speeds, frequent weaving and lane–switching, mid–block stoppage to load and discharge passengers, and swarming around critical intersections in search of customers. Using data from Jakarta, Figure 2.2 shows that on the basis of typical passenger loads, all public transport modes utilize road space more efficiently than private cars. While on a passenger–car equivalent basis, pedicabs and micro–vehicles provide less throughput than buses, their swiftness and fleetfootedness in traffic streams partly make up for the difference. And compared to what has increasingly become the world's mobility standard, the low–occupancy private automobile, informal carriers that stick to their natural habitats (e.g., local streets in the case of pedicabs) are likely no greater contributors to traffic snarls.

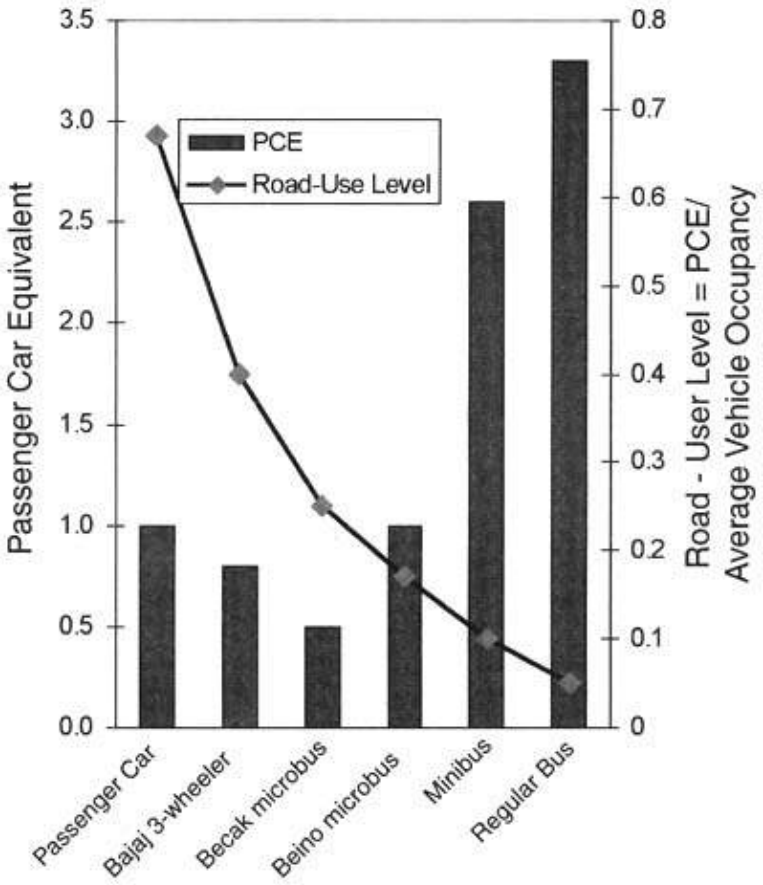

Figure 2.2. Comparison of Passenger Car Equivalents (PCEs) and Road–Use Levels Among Transportation Modes, Based on Experiences in Jakarta, Indonesia.

The graph shows conventional buses occupy, on average, three and a half times more road pavent than minibuses. However, when adjusted for the considerably higher occupancy of buses (including standees), the per–passenger use of road space of a standard–size bus is roughly One–half that Of a minibus.

Source: R. Cervero, Paratransit in Southeast Asia: A Market Response to Poor Roads?, *Review of Urban and Regional Development Studies,* Vol. 3, 1991, pp. 3–27. *Note:* Estimates based on the following assumed occupancies: passenger car – 1.5; bajaj – 2; becak – 3; bemo – 7; minibus – 20; and regular bus – 50.

What can be said with a fair degree of confidence is that informal operators form the greatest traffic bottlenecks at and around major bus terminals and marketplaces. Thus, their congestion–inducing impacts tend to be spatially confined. This suggests that better traffic management, siting of activities, and provision of off–street infrastructure could go a long way toward relieving congestion impacts.

In circumstances where sheer volumes overwhelm road capacities, modes of fundamentally different speeds compete for space, and a free–for–all mentality prevails, traffic gridlock is inevitable (Photo 2.15). In such instances, informal carriers must be regulated, traffic engineering standards maintained, and traffic laws

vigorously enforced. And perhaps most importantly, pricing mechanisms must be introduced to ration capacity and rationalize travel behavior.

2.4.5 Safety and Health

Differences in motoring speeds and levels of vehicle crash–worthiness make the mixed–traffic environs in which most informal transport systems operate especially accident–prone (Photo 2.16). Issues related to vulnerable modes are reviewed below.

Non–Motorized Transport: Pedicabs

When it comes to safety, pedicabs are clearly the most vulnerable informal carriers. Other motorists openly, and without fear of reprisal, intimidate them not only because of their vehicle size and weight advantages, but also because pedicab drivers are poor and powerless. Bicycle taxis of western Kenya have had a hard time fending off *matatus* minibus operators as they weave and heave along narrow highways and steep plains. "Because they offer stiff competition to the minibuses", notes one observer, "there have been cases where the latter deliberately bump bicycles off the road, with the intention of giving bad publicity to this means of transport."[73] A study of bicycle accidents over a ten–year period in Beijing showed that most were caused by motorists who refused to yield the right–of–way or who turned suddenly into cyclists' paths.[74] Besides their lighter weights, their usual absence of rear– and head–lights and other electrically powered attachments make pedal–powered modes all the more vulnerable, especially at nighttime.[75]

In actuality, the few statistics available suggest that riding a pedicab can be safer than many alternatives. A recent study of *Vulnerable Road Users,* sponsored by the Asian Development Bank, revealed that despite their size and weight disadvantages, pedicabs are no riskier than buses and a lot safer than riding a motorcycle.[76] *Cyclo* pedicabs and bicycles accounted for an estimated 59 percent of pedestrian and vehicle volumes during peak periods in Hanoi, yet were involved in just 11 percent of traffic accidents (with bicycles involved in the overwhelming majority of these accidents). In contrast, buses made up 1 percent and motorcycles 29 percent of peak–hour traffic, but were involved in 10 percent and 61 percent of accidents, respectively.[77] In Dhaka, while cycle–rickshaws comprise 45 percent of registered vehicles (and an even larger share on unregistered ones), several independent studies have estimated that they are involved in only 10 percent of recorded accidents.[78] This is of little consolation to those in a rickshaw who have had the misfortune of colliding with a bus, truck, or minibus, modes which are involved in 97 percent of Dhaka's rickshaw–related deaths.

Photo 2.15. Traffic Gridlock in Dehli, India.

The clash of motorized vehicles and human carriers creates traffic standstills for much of the day along Delhi's major commercial corridors. To keep things moving, traffic cops resort to lashing human carriers with whips.

Photo 2.16. Mixed Traffic Conditions in Medan, Indonesia.

The combination of trucks, sedans, microbuses, three−wheelers (pedal−powered and motorized), bicycles, and pedestrians sharing the roadspace creates the potential for serious injuries.

Besides the inherent vulnerability of light−weight pedicabs, operators themselves are often guilty of jeopardizing the safety and welfare of passengers by routinely violating traffic rules. A recent study in Yogyakarta, Indonesia found most becak operators are scofflaws.[79] Nearly half routinely drove against the traffic and one out of five regularly ignored traffic signals. Such statistics, however, beg the question: are pedicab operators guilty of violating traffic laws or are traffic engineers guilty of ignoring the needs of non−motorized forms of public transport?

Non−Motorized Transport: Horse Carriages

Perhaps even more vulnerable to the explosion in urban car traffic are traditional horse−drawn passenger carriers, like the *tonga* of Pakistan, *delman* and *dokar* of Indonesia, and *calesa* of the Philippines. Because they disproportionately consume road space and are not very maneuverable in traffic streams, horse−carts are a dying breed. Remarked a Pakistani "tongawallah" operator: "Now it is very dangerous to ply a tonga on city roads. We are unable to compete with fast moving vehicles. The roads are broken and accidents are common."[80] This explains why the number of tonga around Karachi's busy Lea Market has fallen from over 400 in the early 1980s to fewer than 100 today.

Motorcycle−Taxis

The proliferation of motorcycle−taxis has surely worsened the safety record of the informal transport sector. Because motorcycles and mopeds zip along at fast speeds, usually in regular traffic lanes, collisions with four−wheel vehicles often means death for both drivers and passengers. Their smallness makes motorcycles vulnerable. They are often in auto−motorists' blindspots, a situation that is worsened when motorcyclists zig−zag in and out of traffic streams. Driver youthfulness, inexperience, and tendencies to "show off" further increase the risk of mishaps. In Bangkok, accident rates for motorcycles are 20 times higher than those for private automobiles.[81] In sub−Saharan Africa, motorcycle−taxis are disproportionately involved in accidents not only because of aggressiveness but also because many drivers take drugs to immunize themselves from the hot sun and rigors of work.

Driver Health

Besides the risk of accidents, another safety concern of informal transport services is the effects of strenuous labor on the physical well−being of operators. Most micro−vehicle drivers are fully exposed to the elements, including torrential downpours and temperature extremes. Many also suffer from prolonged exposure to tailpipe exhausts and diesel fumes. Fine airborne particles are increasingly recognized as a serious health threat since they tend to lodge deeply into peoples' lungs.[82] Lead, still widely prevalent in the motor vehicle fuels in developing countries, is known to impair many parts of the body, including the circulatory and respiratory systems. Yet pedicab operators depend on healthy lungs and air filtration to propel their customers and onboard goods. Pedaling people and commerce for a living is often viewed by officialdom as "inhumane"

and “exploitative” for the harsh working conditions drivers endure. The recent reinstatement of the ban on Jakarta’s becaks was defended by Indonesia’s recently elected President on these very grounds.

The recent survey of becak and ojek operators in Jakarta revealed the nature of physical ailments associated with the work. The survey found that most surveyed operators frequently experienced backaches and overall muscular aches and pains (Figure 2.3). Other common afflictions included headaches, chronic coughing, and sinus problems. Of course, few developing countries have occupational health standards or labor protection laws. Even if they did, independent, free−lance operators would unlikely adhere to them. Finding ways of safeguarding the physical health and welfare of underprivileged transport workers remains an important policy challenge. In many instances, improving air quality, such as by phasing out leaded fuels and introducing catalytic converters, would be an important step in this direction.

2.5 Conclusion

The informal transport sector survives in good part because a viable mobility marketplace exists in much of the developing world. Through hard work, resourcefulness, and at times sheer spunk, many informal operators are able to earn enough to support themselves and their families. Struggling the most to make ends meet are pedicab operators, who in some of the world’s poorest cities play a vital role in providing mobility for the poor. The inability of pedicab operators to put away enough income to one−day buy their own vehicles keeps many living on the edges of poverty. The continuous threat of police shakedowns and serious injuries from road accidents makes the life of a pedicab driver a difficult one. Still, many persevere, and given that many drivers have been pedaling for decades upon decades, this line of work is preferable to subsistence farming and toiling in the fields in the minds of many.

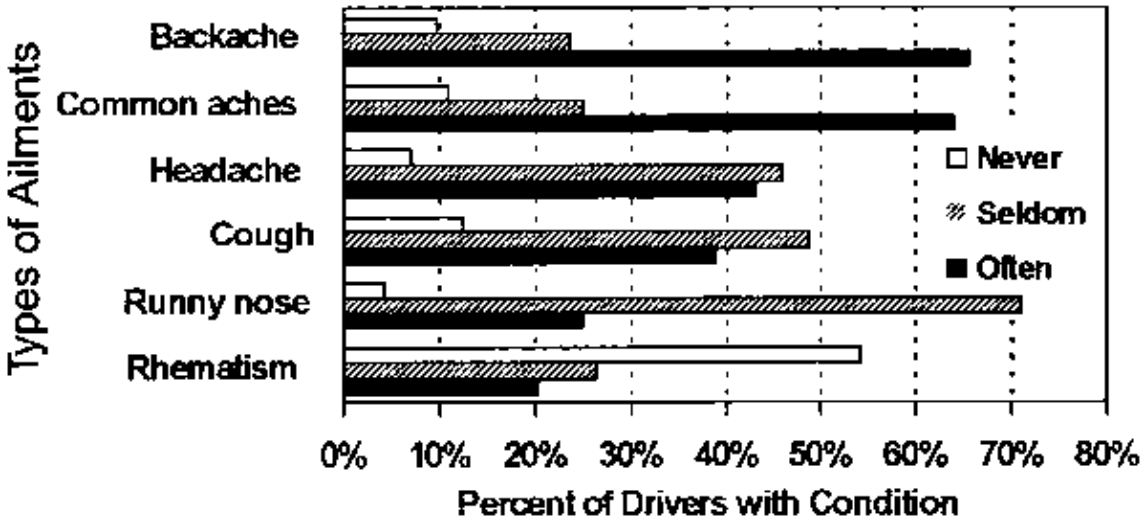

Figure 2.3. Incidences of Physical Ailments Cited by 72 Surveyed Pedicab (Becak) and Motorcycle−Taxi (Ojek) Operators in Jakarta, Indonesia, 1999

Globally, informal transport spans a kaleidoscope of transport modes. Services differ markedly in terms of operating speeds, service coverage, seating capacities, and levels of comfort. Prices are also highly differentiated. Such diversity reflects the inherent market responsiveness of entrepreneurial transport services. Many informal modes serve niche markets like market−to−home journeys and feeder connections to mainline bus routes. While those who ride informal services tend to be poor and car−less, some modes like hired−motorcycles and commercial vans attract a distinctly more middle− and professional−class clientele.

The drive to maximize profits lies at the root of many problems caused by informal transport services. To contain costs, preventive maintenance is kept to a minimum, second−hand, balding tires are used, upholstery stays torn, and nicks and dents accumulate. And to reel in customers, drivers resort to near dare−devil driving tactics. Thus, the informal sector’s operating practices are geared to maximizing short−term profits as opposed to growing a sustainable enterprise that delivers quality services to its customers.

Consumer attitudes toward informal services suggest that they provide plentiful benefits. Most liked are their speed advantages and, in some instances, greater track record for dependability. What patrons fear most, however, are accidents. Such concerns are appropriately placed, however from what few statistics are available, pedicabs and other micro−vehicle services have relatively good safety records. Regardless, when

accidents do occur, informal carriers usually fare the worst.

Market and performance characteristics of informal services provide cues about the kinds of policy reforms that might yield important benefits. Promising policy initiatives are addressed later in this report. To gain insights into the institutional and organizational landscape of informal services, which ultimately must bear much of the responsibility for initiating reforms, we turn to the next chapter.

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Chapter Three: Organization, Regulation, and Public Resources

Just because pedicabs, hired–motorcycles, and unlicensed minibuses are unsanctioned and operate outside the rules of law does not mean that they lack organizational structures or any kind of internal framework for

rationalizing services. Nor are informal operators “illegal” in all respects – even among non–registered operators, some have commercial driving permits, some carry insurance, and most respect territorial limits. Nor are these “marginal, in–the–background” carriers inoculated from the effects of public policies and actions.

Oversight and coordination of informal transport services occurs, to varying degrees, at the internal and external levels. Internal “self regulation” can take the form of social norms, customs, and “gentlemen agreements” that tacitly govern behavior. More often than not, however, some form of self–initiated cooperatives provide a structure for internal oversight and control. External regulation occurs, again to varying degrees, through some combination of local gangsterism, local police pressures, and formal strictures and laws.

This chapter examines various institutional, organizational, and regulatory aspects of informal transport services. Current organizational structures are reviewed, with particular focus given to the vital roles played by route associations. This is followed by a discussion of regulatory approaches and their relationship to informal transport services. The chapter ends with a discussion of what we know about the effects of various public policy initiatives, like deregulation and government provision of credit, on informal transport services.

3.1 Organizational Approaches

Most formal transportation organizations are vertically integrated, involving neatly layered hierarchical arrangements for the production of services: an executive level, below which lies a management structure, below which lies field supervisors, and below which lies operators and field personnel. Informal transport services are nowhere near as vertically or tidily organized. Indeed, as discussed in the previous chapter, service production quite often lies at the hands of a single individual – the owner–operator.

Informal transport represents among the purest examples of vertically disintegrated transportation. In contrast to regional transit authorities and formal franchise arrangements, the industry is held together in a loose, horizontal fashion, dependent upon carefully cultivated linkages and nurtured relationships among stakeholders, including fellow operators, parts suppliers, local police, creditors, and street hustlers, among others. Thus, rather than relying upon intra–firm relationships and collaborations for the production of services, the informal transport sector depends upon inter–personal and inter–operator linkages and fellowship.

3.1.1 Route Associations

Route associations, or more generally, cooperatives, are the *sine quo non* of any successful informal transport network. They are absolutely essential in rationalizing the delivery of services in an environment that breeds ruthless competition. Route associations exist first and foremost to bring order and avoid inefficiencies and redundancies within a spatially defined service area. They set the “ground rules” in order to avoid all–out chaos and anarchy in the streets. This means ensuring supplies are reasonably in balance with demand, duplication in the routing and scheduling of services is kept to a minimum, customer boarding and alighting takes place in an orderly fashion, and some level of civility and good citizenship is maintained among members.

Route associations exist at all levels of privatized transport services in the developing world, whether legitimate and formal or illegitimate and informal. Because the business of route associations is the same regardless how legitimate services are, this section discusses cooperatives in more generic terms.

Many route associations adopt internal rules and procedures. Rules mainly focus on the twin goals of fairness and efficiency, such as ensuring adequate service during slack periods by rotating operating responsibilities and prohibiting members from stealing customers by running ahead of the pack, a practice known as “head–running”. Some associations even operate their own form of traffic court, wherein alleged offenders go before a jury of their own peers and those found guilty have their fines meted out. Associations also go after renegades, quick to alert the police of interlopers or bandit operators who encroach on their territories. In wealthier countries, associations also provide financial services, such as access to credit and group discount purchases of insurance, equipment, spare parts, fuel, and lubrication. Some hire “plants” whose jobs are to stake out areas where police officers are present and issuing citations, radioing the information to a central depot. Associations also lobby for the rights of their members. On legislative matters, they often side with initiatives that promote market–based approaches toward setting fare and service levels.

The costs of an association's activities are covered through membership fees. Association leaders are usually democratically elected, chosen among the ranks of the most senior and respected fellow operators. In many countries, such as Mexico, Brazil, and Kenya, association leaders belong to umbrella organizations which lobby for members' interests in local, state, and national political arenas. In Rio de Janeiro, the umbrella organization of informal van operators publishes a newsletter and routinely stage events for press coverage in an all–out campaign to cast the clandestine van industry is a positive light.

From a user's perspective, cooperatives are the front–lines for coordinating services and bringing some semblance of order at terminals. Many associations hire dispatchers and field agents to ensure orderly behavior at pick–up points, along routes, and at major traffic intersections. This does not mean that they are benevolent or socially progressive organizations. Their loyalty lies solely with their members. Many give short shrift to matters of broader public concern, like safety, vehicle upkeep, and coordination of routes or timetables.

Route Associations in More Developed Settings

Route associations tend to take on a more formal structure and indeed are more influential as income levels rise. In low–to–middle–income settings like Puerto Rico, Argentina, and the Philippines, route associations are formally constituted, non–profit organizations with by–laws, elected boards, and full–time administrative officers. Many have lengthy sets of rules and procedures aimed at ensuring good services, avoiding unnecessary duplication, and ensuring basic service levels are maintained during low–demand periods.

Latin America and the Carribean region have the most developed and successful route associations anywhere. The structure and experiences of Rio de Janeiro's route associations are reviewed in Chapter Eight. Below, some of the approaches adopted by route association in organizing private transport services are outlined for several other cities in the western Hemisphere.

• *San Juan.* In Puerto Rico's capital city, one finds two levels of cooperatives. Less formal are what are called "unions" – loose collections of *publico* minibus operators who meet occasionally, usually on an as–need basis, to deal with problems like interlopers. The primary role of unions is to rationalize services within a defined territory. Union members share a common place at terminals (mainly to coordinate vehicle departures), rotate services between vehicles, and occasionally buy tires and spare parts wholesale. More formal are the "cooperatives", with formal membership, a democratically elected management structure, on–going membership dues, and a set of internally enforced rules and procedures. Besides organizing driver tours and rationalizing service delivery, cooperatives promote and actively lobby for member interests, pool resources to support a member benefit program, pay extra wages to night–shift operators, and staff queuing and staging areas.

• *Mexico City.* With the responsibilities for policing and regulating paratransit services spread over multiple government agencies, and few resources available for enforcement, route associations have, for all intents and purposes, taken on this responsibility in Latin America's largest metropolis. Each of the 100–plus *peseros* micro–bus and *colectivo* minibus routes in the Federal District is today represented by a route association. They have become the de *facto* enforcers of the Federal District's paratransit regulations, helping to keep an estimated 20,000 illegal "pirates" at bay. Besides chasing away illegal operators from members' routes, associations also hire attendants to direct passenger boardings at busy terminals, maintain records of drivers' log–in and log–out times, and settle claims and disputes stemming from traffic accidents and over–aggressive driving. Above the associations are 15 umbrella organizations whose chief responsibilities are to politically lobby for the interest of route associations and their members.

Mexico City's largest associations elect full–time presidents and governing boards, and maintain administrative offices, central dispatchers (for vehicles equipped with short–wave radios), and service garages. In addition to routine maintenance and repairs, associations stockpile vehicle parts that are made available to members at discounts. In overseeing 2,500 minibuses and Volkswagon vans in central Mexico City, the Route 2 association employs field attendants at busy terminals, keeps track of who is driving and when, chases away illegal operators, and maintains "peace" with local police officers.

• *Buenos Aires.* In Argentina, where urban transportation services are largely privatized, route associations have, as in Mexico, historically been leaned upon to internally organize and

manage services. Until the formal concessioning of urban transport services in the early 1990s, private *colectivo* minibuses, many operating illegally, ruled the roost of Buenos Aires's network of public transport services. During this era, route association played prominent roles, selecting and employing operators and setting and assigning schedules for the city's privately owned, brightly colored colectivos. Route associations were the glue that kept the entire system running efficiently. For a number of years, owners turned their earnings over to their associations, which in turn divided proceeds according to an agreed–upon formula.[2] Besides coordinating timetables and routes, associations also organized local manufacturing of minibuses using imported truck chasses, set up body and repair shops, and run insurance companies that write policies to cover their fleets. They also provided guarantees needed to obtain outside financing. Today, informal and quasi–informal operators are staging a comeback, numbering over 80,000 vehicles *(remises* and *kombis)* throughout the 12 million–inhabitant metropolitan area, cornering a respectable share of the burgeoning suburb–to–suburb travel market.

• Caracas. The carros por puestos minibuses of Caracas are organized by voluntary associations, each which counts anywhere from 10 to 300 vehicles.[3] Members pay dues in return for the right to operate in a particular district without fear of reprisal from local police. As elsewhere in Latin America, route associations perform such functions as: securing authorization for new routes; allocating work stints among driver members; assisting owner–members in obtaining commercial loans for vehicle purchases; settling of accident claims; and representing members in dealings with government officials.

Pedicab Associations

Pedicab associations tend to be less formally structured than the those representing minibuses, as reviewed above. Most pedicab associations consist of loosely knit federations of one–man operators and micro–enterprises whose chief purpose is to provide strength in numbers in coping with local police and enforcement authorities. Studies in Cambodia and Indonesia show the internal organization of pedicab services to be based either on family relations or geography of origin.[4]

Some of the most notable pedicab associations are found in Africa. In the Siaya, Kakamega, Vihiga, Busia, and Kisumu areas of western Kenya, bicycle– taxi operators have organized themselves into formidable associations that have the capacity to mobilize savings among members and negotiate their presence with local authorities.[5] One of the most successful is the Kibos Ngware Group that links the Kisumu town center with three suburban communities. The association claims 500 registered bicycles that carry 7,000 passengers per week. An important function of the group is to broker bicycle leases. People who own bikes can register them with the association and receive US$ 0.80 per day in lease income. Aspiring bicycle–taxi operators in turn rent them from the association for about US$ 1.00 a day. The association also attaches a number plate on each association bicycle, mainly as a confidence–builder for customers who want to make sure drivers are accountable for their actions.

Motorized–Three–Wheeler Associations

Cooperatives of *tricicloer* operators (three–wheel bikes used to carry fruits and vegetables as well as passengers) can be found in Santo Domingo, Dominican Republic. An umbrella organization, the Association of Solidarity Groups, has also formed. Its charges include creating a fund that allows operators to secure bank loans, building a sturdy fleet of tricycles, and promoting the use of local resources and materials for vehicle maintenance as well as crop production.

Metro Manila's motorized tricycle industry owes much to associations for its continuing existence. Through behind–the–scenes lobbying of local officials, tricycle association officers have managed to maintain a foothold on feeder services in Quezon City and other suburban municipalities. Using proceeds from member fees, tricycle associations also man queuing areas to ensure passengers are loaded efficiently and treated fairly.

Cartelization

While route associations are voluntary alliances that provide much–needed order and discipline, they run the risk of evolving into price–fixing cartels. This effectively happened in Santiago, Chile, following deregulation of urban transport services in the early 1980s. Mexico City's route associations have been accused of stifling competition by effectively lobbying governments to freeze the issuance of permits, which have remained

frozen for the past 15 years. The issue of cartelization, and what might be done to head it off, is reviewed below and taken up further in Chapter Ten.

3.1.2 Business Relationships

While route associations provide a framework for organizing inter−operator relationships, below this structure lies more basic arrangements between the owners and operators of vehicles, and occasionally others involved in day−to−day business, like fare collectors and touts. As noted in Chapter Two, in poorer countries, those who own and operate vehicles are usually different individuals. In most cases, drivers pay a set amount each day to lease a vehicle. In other instances, owners and drivers split proceeds based on some mutually agreed−upon formula. Under such interlocking arrangements, vehicle owners and operators feel a mutual obligation to maximize proceeds and share in profits.

In many developing countries, one−man, freelance operations are common. The principle benefits of atomistic ownership are cost savings and nimbleness in responding to market shifts. The downside is a tendency toward cutthroat and ruinous competition. Where independent owner−operators are prevalent, route associations are all the more imperative for promoting discipline and civility.

Most members of route associations are vehicle owners. Those with personal investments in tri−wheelers and minibuses have the greatest stake in ensuring commercial success over the long run. Drivers and conductors sometimes also form loose−knit associations for purposes of promoting their parochial interests and, if necessary, organizing work stoppages. Because supplies of potential paratransit drivers far exceed demand, such alliances are fairly ineffective at advancing labor rights.

In some areas, like Kingston, Jamaica, business relationships vary according to class of vehicle. In Kingston, private buses are almost entirely owned by investors who hire drivers and conductors. In contrast, 97 percent of minibuses and sedans are operated by vehicle owners. Kingston is also noted for its hierarchy of business relationships. Until recently, the local government granted exclusive franchises for operating within specific territories of the region. Because most franchise−holders were undercapitalized, they in turn sub−franchised to independent owners to meet their service obligations, even though franchise agreements expressly forbade them from doing so. Private bus sub−franchisers in turn hired operators and conductors who, in the case of the busiest, most competitive routes, hired touts to lure in customers. The many layers of involvement has complicated management and oversight, resulting in, as discussed in Chapter Seven, fairly chaotic and undependable services.

One area where drivers seem to have gained the upper hand over vehicle−owners is Niamey, Niger. There, “redhead” minibuses have historically depended on mutual profit−sharing among absentee owners and vehicle operators.[6] Owners entrust their vehicles to salaried drivers who can use them continuously, day and night, for as long as their contracts remain in effect. Owners pay all operating costs, except for petrol. The driver pays the owner a daily lease fee as long as the vehicle is in running condition. In exchange, the driver can operate his sedan whenever and wherever he chooses. His daily income is thus what is left over after paying the lease fee, petrol, and occasionally bribes to local police. Tension occurs, however, since drivers want to run vehicles as many hours as possible but owners prefer more limited operating hours to prevent rapid depreciation. Because owners cannot restrict vehicle usage, the tendency has been for leased vehicles to be quickly run into the ground, forcing some vehicle owners to abandon the business.

3.1.3 External Relationships

The ability of informal transport operators to accumulate capital assets and put themselves on sound financial footing depends crucially on access to commercial lines of credit. It is the intense pressures that many operators face to earn enough money to survive In the city and feed their families that leads to over−aggressive driving and cutthroat competition.

The never−ending lease payments operators pay to “absentee landlords” who own the vehicles, often half or more of their daily in−take, means few are able to break out of the shackles of urban poverty. Banks often consider small−scale, private transport operators part of the underground economy, involved in shady business dealings and vulnerable to the whims of unscrupulous politicians. In places like the Carribean and sub−Saharan Africa, banks are reluctant to lend to informal operators, and if they do, interest rates are very high (40 percent or more) and the payback periods are very short (3 years or less).[7] Unable to obtain credit through formal channels, some operators turn to street lenders and loan sharks, becoming veritable indentured slaves. Because of prohibitively high interest rates, they end up turning over most of their daily earnings to creditors and never are able to get out of debt.

Classical arguments for regulation of urban transportation are rooted in economic principles of “merit goods” and “public safety and welfare”. The “merit goods” principle holds that urban transport benefits society as a whole due to the economic and social benefits conferred by enhanced mobility. The notion behind “public safety and welfare” is that common–carrier services must meet the public’s mobility needs in a safe and efficient manner, and at a fair price.[8]

While rules and requirements governing private transport services are on the books in all countries of the world, many poor nations lack the institutional resources to enforce and implement regulations. Weak institutional arrangements have thwarted efforts to rationalize informal transport services far more than weak regulations.

3.2.1 Transport Regulations

As protectors of public safety and welfare, most governments rely upon central and sometimes local institutions to regulate common–carrier services. Regulations are meant to guide the actions of private operators so that they collectively promote public safety and welfare. Regulations are not meant to be punitive. With regulations come some protections to service–providers as well. For instance, since common carriers are liable for losses or injuries to passengers, they are normally held to high indemnity standards. In return, common carriers are afforded some protection from outside competition through special certification requirements.

The Scope of Urban Transport Regulations

The following represent the chief requirements imposed upon common carrier operators in regulated marketplaces:

- *Market Entry.* In most countries with formal regulations, new entrants to the marketplace must prove a proposed service will promote the public interest. A “Certificate of Public Convenience” is issued to any applicant who demonstrates an unmet market need will be met by his or her entry into the marketplace. Sometimes, new operating permits are rationed according to a pre–determined formula.

- *Pricing.* Often, regulators set fare rates and structures based on economic studies that determine fair rates of return, normally anywhere between 8 to 15 percent on investment. Mandated tariff structures seek to promote some combination of cost–recovery, equity, clarity, ease of administration, and revenue buoyancy.

- *Service Characteristics.* For taxi–like services, restrictions are sometimes set on when and where common carriers can operate, maximum passenger loads per vehicle, and non–passenger activity (e.g., freight and package delivery).

- *Liability Insurance Coverage.* To protect and indemnify both passengers and the general public from potential injuries and damages from accidents, common carriers are required to maintain a certain minimum level of liability coverage. These amounts vary, however in the developing world they tend to be a small fraction of minimum coverage levels found in developed countries.

- *Fitness Standards.* Sometimes regulators set performance standards for both vehicles and operators, such as maximum allowable vehicle age, minimum driver age, and maximum permissible numbers of vehicular accidents and infractions during a driver’s lifetime.

Some standards make eminently good sense, such as mandating minimum levels of insurance coverage. More debatable is the efficacy of controls over market entry, pricing, service characteristics, and fitness standards (like maximum vehicle age).

Table 3.1 outlines core arguments for and against the regulation of informal transport services. In principle, regulating supply only makes sense when natural monopoly conditions exist, or public policies call for cross–subsidization of services.[9] It is for these very reasons – e.g., to protect franchisers and public operators

from injurious competition; to ensure the least profitable neighborhoods are served along with the most lucrative ones; etc. – that supply restrictions are often imposed.

Regulations are not without a price, however. They potentially squelch competitive instincts and give rise to standardized services. Also, requiring vehicles to be new can run counter to the goal of keeping services affordable to the poor. Too much regulation can force the transplant of first–world types of services in areas where most inhabitants can only afford traditional third–world ones (e.g., second–hand vehicles; worn–out interiors; etc.). Regulations can also erect barriers into the marketplace to those who struggle to read or who feel intimidated because such matters are beyond their cognitive realm. Bureaucratic abuse among underpaid, bribe–seeking civil servants who over–interpret codes and procedures is also a danger.

The one regulatory area where all sides agree no–nonsense language and enforcement is needed is with regards to safety. In parts of Africa, the informal transport sector's safety record is abysmal. Setting and enforcing clear rules and requirements related to driver behavior (e.g., maximum infractions per year) and vehicle fitness (e.g., operative headlights and reflectors) is essential. Stringent safety rules are particularly important in light of the vulnerability of light–weight vehicles like pedicabs and motorized three–wheelers. When a bus, truck, or passenger car collides with a pedicab or motorcycle, the lighter vehicle invariably loses. Vehicle weight differentials are a decisive factor in the severity of road accidents. Of course, even more vulnerable are the pedestrians, push–cart vendors, human–carriers, and cyclists who share passageways with micro–buses and minibuses in third–world cities. Safety standards need to acknowledge their rights and responsibilities.

Table 3.1. Pros and Cons Associated with Regulation of the Informal Transport Sector

PROS	CONS
Protects public safety and welfare	Suppresses competition
Reduces over–competition	Adds administrative and overhead costs
Promotes fair pricing	Presupposes institutional capacity
Sets minimal service, fitness, and indemnity standards	Poses potential cognitive barriers to undereducated drivers
Protects operators' rights and interests	Invites abuse among underpaid enforcement officers and civil servants

Transport Regulations in the Developing World

All countries regulate common carrier services to some degree. The case materials in Parts II and III of this report reveal that regulatory approaches are remarkably similar in scope and coverage across different corners of the globe. All case–study areas have regulations on the books that control market entry, liability coverage, and fitness standards, however modestly. Less consistent are controls over pricing and service features (e.g., routing and timetables). The inability and lack of political will to enforce requirements, however, cast doubts over the efficacy of some strictures.

Weak regulatory environments threaten not only the welfare and safety of the general public, but potentially the welfare and safety of service–providers as well. In the absence of clear and cogent requirements, those in positions of power can make up their own rules. Quite often, this takes the form of police harassment and shake–downs of pedicab, motorcycle, and minibus operators. Indeed, according to one account, the only truly common trait of informal transport worldwide is that it is routinely subject to extortion and protection racketeering.[11] Without a supportive and organized institutional and regulatory structure, informal transport invites informal rule making.

Despite formal regulations, in many cities with poor or non–existent public transport services, governments have effectively given up on trying to ban or control unregistered transport services. The old, often rickety used cars, vans, and motorcycles that haul residents throughout metropolitan Lagos, for example, have been accepted by government officials as a "necessary evil". While few are licensed or carry third–party insurance, there are no official sanctions against them.

3.2.2 Environmental Regulations

Developing countries lag behind the industrialized world in legislating environmental requirements, so as might be expected, little headway has been made in enacting air and noise standards for pedicabs, jitneys, and other informal transport modes. For–hire motorcycles and motorized three–wheelers are significant

sources of noise and air pollution because most have two–stroke engines that are out of tune. In Dhaka, the share of motor vehicles with two–stroke engines increased from 2 percent in 1983 to 23 percent in 1996 owing to the rise in auto–rickshaws and auto–tempos (three wheeled, 9–seater scooters).[11] To make matters worse, gasoline pilfered from official vehicles finds it way into the informal market for sale to auto–rickshaw and auto–tempo drivers. Stolen gasoline is usually mixed with kerosene, which when placed in two stroke engines exacerbates tailpipe emissions. Because Bangladesh has no national air quality standards or detailed environmental regulations, air pollution has steadily worsened in Dhaka despite its comparatively low level of motorization.

The clash between goals of environmental protection on the one hand and economic development on the other exudes throughout the debate over regulation. When the Philippines government enacted a national Clean Air Act in the mid–1990s, a sunset clause was placed on two–stroke tricycles that called for their eventual phase out. Through aggressive lobbying on the part of tricycle associations, however, Metro Manila's unique sidecar motorcycles have expanded, rather than contracted, in numbers in recent times. Recent efforts to mandate muffler silencers on tricycles throughout the Philippines have also gone nowhere as tricycle association members, whose sheers numbers grab the attention of any politician wishing to stay in office, have vigorously opposed them. Tricycle operators insist that silencers significantly reduce the horsepower of their vehicles, limiting the loads they can carry and thus their farebox intake. India has also sought to pose strict emission standards on two– and three–wheelers with two–stroke engines. There, lax enforcement has undermined the effectiveness of emission regulations. Clearly, the chief challenges in mitigating environmental problems posed by informal carriers are social and political, not technological, in nature.

3.2.3 Liberalization

The effects of liberalizing urban transportation marketplaces to allow more private sector participation, including informal service–providers, have been quite varied. Some experiences, notably in Santiago and Dehli, have backfired, while others, such as in Colombo and Damascus, have been more positive. On balance, some degree level of active government involvement – mainly in setting performance standards and initiating supportive policies – is essential if liberalization is to be successful. This is especially so in very poor countries.

> *Santiago, Chile:* Following the deregulation of the urban transport sector in 1980, route associations transformed into cartels, colluding to raise fares without commensurate expansion or improvements in services.[12] While a wider array of paratransit options emerged following deregulation, prices rose sharply across all carriers.[13] Quality of service – measured in terms of vehicle age, cleanliness, and reliability – also slipped. Competition heated up so much that a new occupation, sapos (Spanish for "toads"), formed for purposes of selling information to operators about downstream traffic conditions and locations of waiting customers. Some 3000 sapos worked full–time advising drivers when to overtake competitors and how to avoid police traps. In response to price–gouging and cartelization, Santiago officials opted to takeover the transport sector in the central parts of the city, competitively granting exclusive franchises.
>
> *Delhi, India:* Opening up the marketplace to private buses in 1992 triggered an onslaught of private "blueline" buses.[14] While buses came by more frequently following decontrol, they were mostly old, noisy, overloaded, and unsafe. Under the new regime, surveys showed that 90 percent of drivers had no formal training and half worked 12 to 16 hours. In 1995, private buses constituted just 0.15 percent of registered vehicles in the city but were involved in 11 percent of accidents (amounting to an average of 3 collisions per day). Authorities attributed these unwanted outcomes to the prevalence of single–bus operators who cut corners to maximize profits. Current policies call for an eventual conversion to franchising, such as in Santiago.
>
> *Colombo, Sri Lanka:* Local authorities allowed privateers to offer bus and minibus services free of fare and route regulation, but opted at the same time to maintain, and indeed strengthen, a publicly owned bus system, Central Transport Board (CTB). Tariffs did not rise significantly in Colombo, nor did cartels form as in Santiago, because of CTB's policy of keeping very low fares to help the poor, forcing private operator to do likewise in order to remain competitive. This was only possible, however, because of a national commitment to subsidize public transit services.

Damascus, Syria: As part of Syria's newfound enthusiasm for private investment, over 10,000 minibuses, know affectionately as *mice,* today dominate the thoroughfares of Damascus, having relegated state–run buses to largely shuttling government workers from ministry to ministry.[15] Instead of waiting half an hour for a bus, residents can now count on a minibus passing by every few minutes. At 20 U.S. cents, about what passengers previously paid for a bus ride, riders can generally count on a seat being available. Many former public bus drivers became minibus entrepreneurs, in some cases tripling their monthly take–home pay. Cartelization has been muted by continued regulatory control over tariffs, subject to regular reviews to ensure fair returns on investment.

3.3 Monitoring and Enforcement

Effectiveness at curbing illegal and injurious urban transport services ultimately rests with a vigorous and dedicated program to enforce rules and requirements. This means devoting sufficient resources – trained officers, judiciary systems, administrators, technologies – to monitor activities in the field. It also means having the resources and legal bases to impose sanctions for violations, be they someone's invasion of another person's route, operating unsafe vehicles, under–insurance, or unruly driving behavior.

Few developing countries, and especially the poorest ones, have the resources to achieve these enforcement ideals. In truth, urban transport tends to be way down the social–policy priority list. When cities face pressing problems related to shelter, child hunger, and crime, problems related to illicit paratransit seem a bit innocuous. Also, the linkages between enforcement and the intended consequences of reduced traffic congestion and accidents are indirect and somewhat tenuous in the minds of many public officials. Indeed, case materials reviewed later in this report reveal problems of lax and inattentive enforcement in all instances, whether Bangkok, Kingston, or Lagos.

Effective oversight and control, it should be added, does not necessarily mean costly administrative outlays. Modest, low–cost initiatives can be highly effective. For example, many areas which have tried to legalize informal services have adopted prominent color schemes. When the major of Olongapo City, the Philippines, sought to rationalize and formalize illegal services, a system of colors and licensing numbers were one of the first steps taken. The color scheme made illegal off–line operations very easy to detect, and the designation numbers made checks on suspected unfranchised vehicles easy to conduct.[16]

3.4 Capital Finance and Funding

Another important policy dimension of informal transport services is capital finance. Approaches to financing the purchase of both rolling stock and supportive armature (e.g., terminal and parking areas) are reviewed below.

3.4.1 Financing Vehicle Purchases

As noted in Chapter Two, comparatively few operators of non–motorized and three–wheel informal services own their vehicle. Many operators face exorbitant interest rates from commercial lenders, absent much in the way of collateral or credit records. Moreover, those seeking to purchase pedicabs or minibuses incur much higher interest rates than do private concessionaires and organized companies, some of which benefit from state loans and preferential treatments.

Some areas have made inroads in opening up financing to cash–strapped informal operators. In Nigeria, for instance, the World Bank and federal government have initiated a pilot scheme for financing the purchase of vehicles for the private sector. Favorable credit is made available to individual operators through a transport association in cooperation with local banks. Brazil has established a national bank that extends micro–credit to individuals and small enterprises with few capital assets, including those seeking to enter the clandestine van business.

In other parts of the world, financing occurs without any government intervention. In Kingston, Jamaica, almost all illegal "robot" operators eventually achieve vehicle ownership by setting aside portions of daily earnings. Surveys show 44 percent of vehicle–owners acquired capital for minibus purchases through personal savings, with family assistance accounting for one–fifth of purchases and commercial loans

bankrolling just 18 percent.[17] Personal financing of vehicle purchases is possible in Kingston largely because many operators are single and only have themselves to support. For the pedicab operator in Manila with six kids at home or the tri−wheel driver in Dehli who cannot afford rent and must sleep on the street, this is not possible.

3.4.2 Public Facilities

As discussed in the previous two chapters, informal services contribute to traffic congestion by queuing and stopping for customers near critical road intersections. While tremendous amounts of public resources go to finance road improvements for “formal” services, including everything from pricey metros to cloverleaf interchanges for the car−owing minority, surprisingly few resources go to upgrade the operations of minibus and pedicab services (which relieve public authorities of the very need to invest resources in expanded public transport services). Even when governments lean on private entrepreneurs to mount mass transit services, they cannot abdicate the responsibility for basic infrastructure and management support to the private sector.

Some modest efforts have been made in recent years to provide basic infrastructure for private carriers. In Metro Manila, local governments have designated areas, usually along side streets, as pedicab terminals. Several have been financed through general fund allocations. In most instances, however, operators must still rely on curbsides to queue for customers. In Bangkok and other Asian cities, informal operators pay a form of site rent to local police officers and neighborhood “protectors” for the very right to occupy key street corners. This is money that rightfully should go to government coffers for purposes of financing off−street parking and terminal facilities. The absence of any formal government program for such purposes means the funds end up lining the pockets of civil servants instead. In Brazil’s biggest cities, clandestine vans and kombi microbuses routinely queue up inside off−street terminals, paying daily or per−entry parking fees to private landholders − fees that get passed on to customers, raising the price of informal transport fares in Rio de Janeiro, São Paulo, and Brasilia to among the highest in the world.

Providing basic infrastructure to informal operators is not an act of charity or good will. These are improvements that they are owed. By paying taxes on fuel, equipment, and earnings in addition to licensing and registration fees, informal operators contribute significant sums to public treasuries. They deserve a return on their investments. Just as private motorists receive high−speed lanes and synchronized signal systems for monies they contribute, informal operators should receive at the very least off−street parking and staging facilities.

3.5 Conclusion

The common view of the informal transport sector as anarchistic and chaotic is largely misplaced. In reality, all forms of paratransit services, including informal ones, exercise some degree of self−policing and self−restraint. This responsibility falls principally on the shoulders of route associations. In ways, these cooperatives are the institutional counterparts to informal services themselves. Like minibus operators, they fill a vacuum left over by the public sector. Namely, they rationalize services, to some degree, by ensuring not too many operators duplicate each others’ routes and practices like head−running and interloping are curbed. Some impose their own form of sanctions, including peer pressure and fines, against routine violators. Institutionally, route associations fill the regulatory void left by weak governance and public oversight. In Mexico City, associations have independently taken over the management and control of nearly all branch connections to metro stations.

Notwithstanding the inroads made by route associations, all countries with informal transport services maintain some levels of regulatory control over market entry, indemnification, pricing, service practices, and fitness. What is far more variable, however, is the level of commitment to monitoring and enforcing rules and regulations. Again, in many areas with thriving informal transport services, this responsibility rests with route associations.

Government’s role in the realm of informal services, however, should not be solely a disciplinary one. There is also a need for active promotion. The two most effective potential ways this can be accomplished are through public assistance in aiding operators finance vehicle purchases (when additional numbers can be justified) and in constructing supportive infrastructure, like off−street terminals.

Notes

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2. The World Bank, Bus Systems Key to Urban Transport: Finding Solutions to a Wide Range of Problems, *The Urban Edge,* Vol. 9, No. 5, 1985, p. 2; J. Martinez, J. Larocca, and R. Pratt, Buenos Aires Colectivo Buses and Experience with Privatization, Transportation Research Record 1557, 1997, pp. 40–47.

3. 1. Takyi, An Evaluation of Jitney Systems in Developing Countries, *Transportation Planning and Technology,* Vol. 44, No. 1, 1990, pp. 163–177.

4. K. Etherington and D. Simon, Paratransit and Employment in Phnom Penh: The Dynamics and Development Potential of Cyclo Riding, *Journal of Transport Geography,* Vol. 4, No. 1, 1996, pp. 37–53; D. Forbes, Petty Commodity Production and Underdevelopment: The Case of Pedlars and Trishaw Riders in Ujung Pandang, Indonesia, *Progress in Planning,* Vol. 16, No. 2, 1981, pp. 103~178.

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6. F. Bourgeois and F. Piozin, The ‘Redheads” of Niamey: An Original Way of Providing Urban Transport, Transport Reviews, Vol. 6, No. 4, 1986, pp. 331– 346.

7. The World Bank, *Performance Audit Report. Jamaica, Kingston Urban Transport Project,* Washington, D.C., The World Bank, Operations Evaluation Department, Report No. 17599, 1998.

8. Common carrier refers to services available to the general public in return for compensation. Moreover, its services are compulsory in the sense that everyone is served who is willing to pay.

9. Natural monopolies have three principal attributes: economies of scale (where average costs decline as supply expands), peak–load demands, and storable resources. Cross–subsidies mean using surplus revenues from profit–making services to cover the losses incurred in serving money–losing ones. A single or restricted number of service providers, it is argued, ensure all segments of an area’s population receive some minimum levels of service. A single public transport entity, the argument goes, will best serve the public interest by operating in sparsely populated areas and using the proceeds from money–making routes to help cover the losses of others.

10. D. Silcock, Urban Paratransit in the Developing World, *Transport Reviews,* Vol. 1, No. 2, 1981, pp. 151–168.

11. M. Karim, Traffic Pollution Inventories and Modeling in Metropolitan Dhaka, Bangladesh, *Transportation Research D,* Vol. 4, 1999, pp. 291–312.

12. R. Darbéra, Deregulation of Urban Transport in Chile: What Have We Learned in the Decade 1979–1989? *Transport Reviews,* Vol. 13, No. 1, 1993, pp. 45–59; J. Allen, Transport Organization and the Latin American Megacity, *CODATU V1: Urban Transport in Developing Countries,* Paris, CODATU, pp. IVA–IV–10.

13. The number of minibuses, known locally as *liebres,* increased from 1,558 in 1978, just before deregulation, to 2,700 in 1985. In the mid–1980s, Santiago’s minibuses were generally charging riders only around half as much as conventional buses, though their fares had nearly doubled in real terms from five years previously.

14. K. Dhingra and S. Savant, Implications of Liberalisation of Bus Services: Case Study of Delhi, *Urban Transport Policy,* P. Freeman and C. Jamet, eds. Rotterdam, Balkema, 1998, pp. 1029–1037.

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PART TWO: Informal Transport in Southeast Asia

Informal transport services take many names, shapes, and forms in Southeast Asia, comprising pedicabs, three–wheelers, jitneys, collective taxis, and minibuses, among others. With a range that spans between human–powered three–wheelers *(pedicabs, becaks, rikishas)* to small buses *(mikrolets, Bis Mini),* Southeast Asia's informal transport sector offers a kaleidoscope of services in terms of seating capacity, speeds, geographic coverage, levels of comfort, and fares. Some vehicles cater to short trips of two or three blocks, others serve intermediate–distance travel, while still others cover entire regions.

Southeast Asian cities also suffer from some of the worst traffic congestion anywhere. Informal transport services are both a reaction and a contributor to this congestion. In Bangkok, Manila, and Jakarta, where rush–hour speeds have slowed to 6 to 8 kilometers per hour in core areas, congestion is principally a product of growth in the motorized vehicle population far outpacing road expansion. In all three cities, vehicle registrations grew at annual rates of 10 to 15 percent over much of the past two decades, matched by only a few kilometers of new thoroughfares each year. Less than 10 percent of total urban space in Bangkok, Manila, and Jakarta is devoted to roads. This is less than half the share of land area devoted to roads found in most European and North American cities.

Part II reviews the challenges posed in rationalizing and upgrading informal transport services in Southeast Asia's three largest metropolises – Bangkok, Manila, and Jakarta. Market characteristics, institutional and regulatory relationships, and potential remedial policies are examined.

Chapter Four: Vans, Motorcycles, and Pedicabs: Informal Transport in Bangkok, Thailand

4.1 Hyper–Congestion

Metropolitan Bangkok, with a population of some 6 million inhabitants, has the unenviable reputation as one of the world's most gridlocked cities. Indeed, during parts of the day, traffic congestion seems pandemic. At the most basic level, traffic congestion has worsened because rapid motorization has not been matched by increased road supply. During the 1990s, vehicle population increased 15 percent annually, while road surface area rose just 1.2 percent a year.[1] A recent survey revealed that Bangkok averages the highest automobile ownership rate of any Asian city – over 200 vehicles per 1,000 residents, in part because the central government sharply reduced vehicle import duties in the early 1990s.[2]

The consequence of rapid motorization and limited road capacity has been near–paralysis – according to one estimate, 3 million person–hours are lost each day in the metropolitan region because of average traffic delays of two to three hours.[3] In the historical core, traffic crawls at below 8 kilometers per hour during daylight hours, slower than a brisk walk. One study estimated that Bangkok loses about a third of its potential gross city product because of traffic congestion.[4] Some fear the city is losing its competitive edge, both domestically and from abroad. Shipment delays due to traffic jams have driven up the cost of local goods and prodded many multi–national corporations to leave for less congested cities.

The poor quality and connectivity of roads in metropolitan Bangkok have provided a natural breeding ground for paratransit development. Much of Bangkok's growth has been piecemeal and minimally planned, resulting in a disconnected and seemingly random pattern of roadways. Branching off of main thoroughfares are dead–end local streets, called *sois* producing a fishbone configuration of passageways (Map 4.1). Bangkok's dynamic paratransit sector, and the many illegal operators that exist within it, have stepped in to provide some of the diversity and carrying–capacity efficiencies that the road network lacks. In ways, Bangkok's rich offering of paratransit modes has helped to compensate for the lack of road hierarchy and connectivity.

As is often the case, paratransit modes have also compensated for unsatisfactory and substandard bus services. Bangkok's public buses often get stuck in traffic jams despite the presence of exclusive bus lanes on several main arteries. Long waits for buses are common and quite often commuters are unable to board

overcrowded vehicles during peak hours. Paratransit services have provided much–needed supplemental capacity while also diversifying the service–price options available to the riding public.

Map 4.1. Bangkok's Soi Superblocks

Disconnected and discontinuous sois form a disrupted roadway landscape that is ideal for small–vehicle carriers, especially motorcycle–taxis.

4.2 Paratransit and Informal Transport Services

Table 4.1 summarizes the current composition of privately owned and operated paratransit services in metropolitan Bangkok. Private taxis, motorized three–wheelers, called *tuk–tuks,* and micro–buses, called *silor–leks,* are the most common entrepreneurial services. Currently 7,400 tuk–tuks ply the streets of Bangkok, serving mainly inner area and tourist spots. Silor–leks, which number some 8,400, serve mainly the sois, or local residential streets, of the suburbs. *Song taeos,* which literally means "two rows", are panel trucks with two rows of wooden benches that are also found mainly in the suburbs. All of these modes – tuk–tuks, silor–leks, song taeos, and taxis – are regulated by Thailand's Department of Land Transport, which controls market entry, geographic areas of operation, licensing of drivers, and the setting of standards for vehicle fitness and insurance coverage. For the most part, these modes are fully licensed and registered, thus in a technical sense are not part of the informal sector.

Table 4.1. Composition of Paratransit Services in Metropolitan Bangkok, by Class

Class/Passenger Capacity Range	Type of Vehicles	Passenger Capacity	No. Vehicles	
			1992	**1998**
II. 12–24	Minibus	18	–	–
	Pick–up: *song taeo*	14	–	3016
	Vans	14	–	4000
III. 6–11	Microbus: *silor lek*	7	8386	8447
IV: 1–5	3–wheeler: *tuk–tuk/samlor*	3	7352	7400
	Motorcycles	1	–	20000
V:1–3 (non–motorized)	Pedi–cabs: *samlor–tep*	2		1000

Bangkok's two primary forms of unlicenced paratransit services are motorcycles and vans.[7] Both emerged on the scene in the 1990s as traffic congestion began to reached intolerable levels. Also present, but less prevalent in numbers, are three–wheel pedi–cabs *(samlor–tep)* which are restricted to the outskirts of Bangkok and the surrounding countryside.

Except for taxis and tuk–tuks, Bangkok's paratransit services are fairly cheap and resourceful, filling up available roadspace when and wherever possible. However, many are also dangerous and, because of aggressive and unruly driving, contribute to traffic tie–ups.

As noted previously, Bangkok's wide–ranging paratransit sector has compensated for the poor hierarchy and connectivity of roads. What has emerged is more or less a three–tiered hierarchy of collective–ride services that match the little variation in road infrastructure that does exist. Serving expressways and primary roads are primary carriers – stage buses (owned and operated by the public sector)[8], metered taxis, and private vans. Along secondary roads, or sois, motorcycles and tuk–tuks dominate, providing feeder connections between residential neighborhoods and commercial districts. And serving tertiary roads, or alleyways, are both

motorcycles, pedicabs, and handcarts (Photo 4.1).

The hierarchy of mass transit services is also seen in usage rates. On a daily basis, passenger loads per day vary from 35 on hired motorcycles, 60 on panel–trucks and tuk–tuks, 520 on minibuses, and 1300 on stage buses.[9] More or less, unregistered operators focus on the niche market of short–haul distribution while registered operators focus more on mainline and longer distance travel, with the notable exception that unregistered commercial vans serve long–haul journeys as well.

4.3 Short–Haul Informal Services: Motorcycle–Taxis

Bangkok's fastest growing informal service, the 40,000–plus for–hire motorcycles *(motorcycle rub jang),* have carved out several distinct market niches: feeder connections to main roads along sois; lateral travel between narrow alleyways and sois; and short–haul journeys along primary roads (except freeways which are off limits to motorcycles). Their growing popularity lies in their ability to maneuver around stalled traffic and squeeze into vacant road slots. Because they can zig–zag through traffic, motorcycle–taxis are steadily gaining popularity for longer journeys. While regulations require motorcycles to operate only in curb lanes, in practice they zip in and out of all traffic lanes, well aware that police patrols are rarely able to nab them.

Motorcycle–taxis are technically illegal because existing Thai law does not recognize them as common carriers. Rather, they are licensed under the Motor Vehicle Act as personal transportation modes, which bars them from providing commercial, for–hire services.

4.3.1 Genesis of Motorcycle–Taxis

Hired motorcycle services first started in Bangkok's suburbs around 20 years ago, connecting the soi of housing projects with mainline public bus and panel–truck (*song taew)* services. At first, motorcycle–owners helped their neighbors by providing lifts for free. In time, they began ferrying neighbors back–and–forth for a modest fare as a sideline business. The service quickly spread to urban areas, with the first known motorcycle–taxis in Bangkok being initiated by Naval officers.[10]

Nobody knows how many motorcycles there are in the city since, after all, they are unregistered as commercial carriers), however they easily number in the tens of thousands. One study estimated that they jumped in number from just 100 in 1976 to 16,000 in 1987 – a 160–fold increase.[11] Official estimates place the number at over 30,000, though knowledgeable sources place the number closer to 100,000. Bangkok's motorcycle population is exploding, growing at a rate of 15 percent annually, and, no doubt, for–hire motorcycle services are growing at a comparable rate.[12]

Photo 4.1. Hierarchy of Modes in Suburban Bangkok

A tuk–tuk and motorcycle pass a queue of pedicabs in an active suburban commercial district south of the city.

4.3.2 Organization of Motorcycle–Taxis

Bangkok's motorcycle–taxis are very territorial. Virtually all congregate at the corners of sois, the spot which is most convenient for connecting those disembarking from mainline buses routes to surrounding residences.[13] Each soi corner belongs to a particular group, and each group is defined by the cloth jerseys worn by their members that carries a distinctive color scheme and logo (Photo 4.2). Numbers on jerseys define membership to a specific group. The numbers also allow police to keep track of the size of the motorcycle fleet on each route which, in turn, determines the price of approval.

Groups respect turf rights. A motorcyclist who drops someone off in someone else's territory will promptly return to his or her own area. Picking up customers outside of one's area would infringe on someone else's livelihood and thus is avoided.

In Thai, motorcycle groups are called *wins.* Each motorcycle win averages 18 to 25 members. To join a win, one has to pay an entry fee – currently, the going rate for newcomers ranges between 500 and 3,000 Thai baht, or approximately $14 to $84. For the most profitable corners, however, membership fees are as high as 80,000 Thai baht, or around $2,300. At the most desirable win locations, heads also collect daily and sometimes monthly supplemental payments. Payments go to the head of the win, normally the person who first occupied the soi corner and established himself early on the "boss". As discussed later, the head in turn has to pay local police and other officials for the right to occupy a particular corner. As might be expected, there is considerable tension between the motivations of the win head and those of the win members. Heads seek to expand membership to increase his their income while at the same time motorcycle drivers resist more competitors in their turf.

Photo 4.2. A Motorcycle–Taxi Win in Suburban Bangkok

Drivers queue for customers along retail strip during off–peak hours.

Each win has its own internal rules. Work shifts are usually scheduled and allocated. Some wins run their own traffic courts, dealing with alleged violations (e.g., interloping for customers). Most enforce legal requirements that drivers and riders wear helmets.

4.3.3 Motorcycle Service Coverage

A 1992 survey provided insights into the spatial and temporal organization of Bangkok's hired motorcycle services. As shown Table 4.2, commercial motorcycles are concentrated mainly in the middle ring of the city, an area dominated by residences and mixed commercial land uses that grew most rapidly in the 1940 to 1980 period. However, motorcycle–taxis seem to be gravitating increasingly toward the center–city, as evidence by trends in growth rates between 1988 and 1992.

Table 4.3 reveals where motorcycle–taxis most frequently congregated. Around half of motorcycle wins are at soi entrances, followed by other locations on main roads, major activity centers (like markets, government offices, and department stores), and intermodal transfer points (like piers, bus terminals, and railway stations).

Sois are also the busiest locations, and as the table shows, cyclists make fewer trips at the less common locations.

Table 4.2. Distribution of Wins and Motorcycle–Taxis by Subregion in Metropolitan Bangkok, 1988–1992

Subregion *(Khets)*	1988		1992		% change, 1988–1992	
	No. Win	No. HM	No. Win	No. HM	No. Win	No. HM
Inner–area	188	3,827	455	8,467	267	4,640
%	22.6	23.2	32.2	26.9	45.7	31.2
Middle–ring	520	10,805	758	19,280	238	8,473
%	62.6	65.4	53.6	61.4	40.8	56.9
Outer–ring	123	1,896	202	3,673	79	1,777
%	14.8	11.4	14.2	11.7	13.5	11.9
Total Region	831	16,528	1,415	31,420	584	14,892
%	100.0	100.0	100.0	100.0	100.0	100.0

Notes:

No. = Number of Wins or Hired Motorcycles
HM = Hired Motorcycle
% = Percent of Wins or Hired Motorcycles in subregion

Source: S. Prayochvnich. *A Study of the Appropriateness of Transportation by Using Hired–Motorcycle Services in Metropolitan Bangkok.* Bangkok: Chulalongkorn University, Master's thesis, Urban and Regional Planning Program, 1992.

Table 4.3. Congregation Locations and Trip Frequencies of Motorcycle–Taxi Locations

	% of Win Locations	Avg. No. of Trips per Weekday
Soi Entrances	48.0	30–50
Main Roads (non–sois)	26.7	10–30
Activity Centers	14.6	10–25
Intermodal Points	10.7	10–20
TOTAL	100.0	20–40

Source: S. Prayochvnich. *A Study of the Appropriateness of Transportation by Using Hired–Motorcycle Services in Metropolitan Bangkok.* Bangkok: Chulalongkorn University, Master's thesis, Urban and Regional Planning Program, 1992.

About 40 percent of motorcycle wins operate around–the–clock, 24 hours a day, 365 days a year. Only wins that service areas with restricted periods of trip generation, such as shopping districts and government buildings, operate on shorter schedules, some as few as 8 hours a day.

4.3.4 Pricing

For trips in and out of sois, which constitute the bulk of hired motorcycle services, fares are set at a fixed price, usually 15 to 20 baht (US$0.45 to US$0.60) per trip. Intra–soi trips are generally the cheapest since drivers can earn income going in both directions of a soi. Fares for non–soi and out–of–territory trips are negotiable, and usually are fairly expensive because motorcyclists fear being caught by the police.

4.4 Intermediate and Long–Haul Informal Services: Vans

Commercial vans serve an altogether different niche market than motorcycles, namely long–distance commuter runs from suburban enclaves to major in–city transportation terminals. The origin–destination

patterns of vans are distinctly “many–to–few”: in the morning, they flow from many suburban origins to few in–city destinations. The “many” origins include: housing estates, marketplaces, department stores, and schools. The “few” destinations are bus transfer points, piers, and other depots. Currently, the major van terminals are Royal Grounds, Victory Monument, and Central Plaza–Lad Plow.[14] Importantly, most van runs terminate near the end of a freeway, meaning Bangkok’s commercial vans operate principally on grade–separated, limited–access facilities, allowing them to avoid surface–street gridlock. This distinguishes them from motorcycles, tuk–tuks, and other paratransit alternatives.

Vans provide a premium–quality, point–to–point service, focused mainly on the work and school trip markets. They seat 14 customers, usually arranged as two front passenger seats, and three rows of rear seats that each accommodate four persons across. A smaller version of microvans *(silongek),* designed for 4 to 5 passengers but sometimes handling as many as 12, also plies the streets of Bangkok, however microvans are banned from freeways and major highways.

Vans have rapidly become the mobility choice of middle–class suburbanites who have limited access to private cars. They are more comfortable and predictable than buses, plus they provide guaranteed seating. Also, they are all are air–conditioned, a valued amenity in hot, muggy Bangkok. For this, customers pay fares from 10 to 40 bahts (or $0.30 to $1.15) per trip. This is three to four times what they pay for non–air–conditioned bus journeys and considerably more than for motorcycle–taxis (though far less on a per kilometer basis). Demand for van services continues to rise, as evidenced by long passenger queues at a number of terminals. While radial trips are the bread–and–butter market of van operators, the fastest growth is in cross–town, suburb–to–suburb journeys between residential and industrial estates in different quadrants of metropolitan Bangkok.

Technically, vans are illegal because they are registered as private vehicles rather than common–carrier or commercial vehicles. Unregistered vans violate three different Thai laws governing commercial motor vehicle services.[15] Their unregistered status, however, shields them from public oversight regarding passenger safety, fares, or service design. Currently, no public entity is responsible for overseeing and regulating van services, though as discussed later, efforts are underway to change this.

4.4.1 Organization of Van Services

Commercial vans sprung up spontaneously in the early 1990s, responding to the mobility needs of residents of suburban new towns. Prior to this, unregistered vans plied solely the inter–city routes of Thailand.

In 1997, over 3,000 vans hauled around 150,000 passengers a day, operating along 80 different routes spanning the suburbs and central city. Most vans operate between 5 a.m. and 11 p.m. Vehicles are employed resourcefully. During the peak hours, they mainly transport workers and school children, typically running on 5 to 15 minute headways, and on heavily traveled routes, even more frequently. There are no set schedules *per se,* for as soon as a van is full, it leaves, replaced by the next van in the queue. In the off–peak, headways are normally 20–30 minutes. Some off–peak vans are used to haul goods, tourists, and chartered groups.

Like motorcycle–taxis, commercial van services are organized around wins. Van wins, however, are less formal, evidenced in part by the absence of identifying jerseys and numbers among van operators. As in the case of motorcycle–taxis, members of van wins pay entry fees, which in 1997 averaged 20,000 Thai baht, or around $600. And each win has a head who manages services and pays off public officials, for the right, *de jure,* to operate illegally.

4.4.2 Current Van Services

Currently, there are an estimated 300 or so van wins in metropolitan Bangkok. Within the city, many congregate under the air–rights of elevated freeways (Photo 4.3). For this privilege they pay daily parking fees to the Bangkok expressway authority. However, as vans have proliferated in number, more and more have been forced to queue up along local streets. Today, rows of vans snake along narrow sois in neighborhoods surrounding freeways, forcing non–van traffic to a crawl. At the largest wins, heads have hired “queue managers” who use mobile phones to communicate with van operators located several blocks away. Queuing is less a problem in the suburbs, where parking lots of large department stores are used in the morning when most spaces are empty.

Photo 4.3. Vans Queue Under Freeway Right of Way Near Victory Monument

Because of Bangkok's poor air quality, breathing masks are becoming more common.

One of the largest van wins serves the new town of Muang Thong, north of Bangkok near the Don Muang International Airport. Because of the economic downturn of the 1990s, the new town has failed to achieve its growth targets. It was built as a self–contained community for 300,000, but after ten years just 100,000 residents reside there. The developer–owner of Muang Thong actually set the rules for van services. He limited the number of vans to 30, and number of vehicles that can queue at the main terminal, near a popular food court, to three (Photo 4.4). The remaining vans sit in peripheral holding pins, or else are on the freeway or at the Bangkok terminal. Rules also stipulate that while waiting at the food court stop, no van can queue for more than 20 minutes. After 20 minutes, the driver must depart, even if the van is virtually empty (which is rarely the case). From field interviews, it was found that all drivers at the Muang Thong win own their own van. They average 6 to 8 round trips per day and usually work seven days a week. The price for a trip to and from Bangkok, a distance of around 20 kilometers, is 20 Thai baht, or around $0.60. Drivers pay a 25,000 Baht entry fee (about US$700) for the right to make a living on the comparatively profitable Muang Thong–Victory Monument run.

Photo 4.4. Three Vans Queue at the Muong Thong Food Court

Driver loads a customer as other vans queue in line.

This section summarizes both primary and secondary data on the market, or supply–demand, characteristics of informal transport services in metropolitan Bangkok. First, non–motorized pedicab services and panel truck services are discussed, followed by more detailed accounts of motorcycle and van services.

4.5.1 Pedicab *(Samlor–tep)*

Field interviews were conducted with 15 pedicab drivers in July 1999 along a soi near Suksawad Road, a main artery in Samut Prakan, a suburb south of Bangkok. The operators were mainly in the 30s and 40s, with several in their 50s and one in his 60s. Several had been driving pedicabs for 30 to 40 years. All fifteen were born outside of metropolitan Bangkok and took to pedicab driving as a means of survival while in their late–teens and early–twenties. Sadly, after a long period of employment, none of the 15 drivers interviewed owned his three–wheeler. In fact, all leased their pedicabs from the same person. Most provided lifts between a nearby commercial strip and surrounding residences. The average daily income was around 200 baht, or slightly less than six U.S. dollars.

Pedicab drivers said they serve around 12 to 15 trips per day, which amounts to an average fare of around 15 baht, or $0.40, per trip. They drive an average of 40 to 45 kilometers per day, thus the average trip distance of pedicab services is probably around 3 kilometers.

4.5.2 Panel Trucks *(Song Thal)*

In–field interviews and conversations were carried out with several panel–truck drivers in Samut Prakon, a port town south of Bangkok. While most panel trucks are legally registered, many are not, and many more operate illegally in certain districts where they are banned.

Compared to pedicab operators, the working conditions and earnings of panel–truck drivers are considerably better. Among seven drivers who were interviewed, they worked 10 to 11 hour a day and brought home around 500 to 600 Baht (or US$18 to US$20) per workday, and usually more on weekends. Most patrons ride panel trucks to reach commercial districts, traveling short–to–intermediate distances (e.g., 3 to 5 kilometers) for a fare of just 3 baht (around US$0.09). Full loads and rapid seat turnovers is essential to the profitability of *song thal* services. (Photo 4.5).

4.5.3 Motorcycle–Taxis

A 1992 survey of 213 motorcycle–taxi drivers (0.68 percent of the regional total), 108 motorcycle–taxi customers, and 137 randomly surveyed pedestrians provides insights into the marketplace for hired motorcycle services.[16] These results, supplemented by informal interviews and observations in the field, are reviewed in this section.

The Supply Side

(1) Service Levels:

Bangkok's motorcycle–taxi services are "thick", especially along busy sois that connect to main thoroughfares and during rush hours. Drivers report that they average 33 round–trips per day. The range is thought to be fairly large.

The equipment of choice is small, moderately powered motorcycles as suggested by survey results. Driver surveys revealed the following Horsepower (Hp) distribution of hired motorcycles: 80–110 Hp – 52.8 percent; 110–125 Hp – 11.6 percent; and 125 Hp and up – 35.6 percent. The prevalence of two–stroke engines invariably means this sub–sector contributes to noise pollution. Small carrying capacities suggest the typical load is a single passenger.

Photo 4.5. Song Thal

A fully loaded panel truck picks up customers at the rear.

(2) Driver Characteristics:

From both surveys and field interviews, it is apparent that being a hired–motorcycle driver in Bangkok is hard work that most operators are forced into because of limited work opportunities. Most taxi–motorcyclists have families, with a wife who also works.[17] Motorcycle chauffeuring appears to be pretty much an all–male occupation, however several women operators were observed in the field with win jackets. The mean age of a hired motorcycle operator in Bangkok is 27.

Many drivers arrive in Bangkok from rural areas with few skills. Around 70 percent were born outside of metropolitan Bangkok. The largest share, 28 percent, came from one of the poorest parts of Thailand, the northeast. Only 13 percent have completed high school, and 49 percent have no more than an elementary education.

From surveys, 61 percent view their work as a temporary job. Over half have been working less than a year and around three quarters less than two years.[18] Most (57 percent) of drivers entered the business through friends. And virtually all (99 percent) own their own motorcycle, though only 25 percent outright (i.e., three quarters are still paying off loans). Half of hired–motorcycle operators own their jacket and half rent them.

The Demand Side

(1) Trip Characteristics:

Motorcycle–taxis have corned the feeder service market along many of the major sois in built–up portions of Bangkok, typically serving short–to–intermediate–distance trips of 1 to 2 kilometers. The 1992 surveyed revealed that three–quarters of customers live less than a half kilometer from the win where they hired a motorcycle. Over half of patrons transferred from another mode, mainly bus, underscoring the niche–market role of motorcycles as feeder carriers.

Trip purposes are fairly varied: to work – 23.4 percent; returning home – 20.6 percent; multi–purpose – 19.6 percent; to school – 13.1 percent; and personal business – 10.2 percent. Some motorcycle–taxis provide non–passenger services, like messenger service and the delivery of lunches to office workers. Demand is decidedly skewed toward morning hours – an estimated 36 percent of hired–motorcycle trips occur between 6 a.m. and 9 a.m.

The 1992 pedestrian intercept survey revealed that 88 percent of Bangkok residents had hired a motorcycle at least once in their lives. One third said they take them when in a hurry.

(2) User Characteristics:

The 1992 survey of over 100 hired motorcycle customers revealed that 60 percent were female, and most (54 percent) were between the ages of 16 and 25. And compared to drivers, most were well–educated: 44.4 percent had or were pursuing college educations. Transit–captives represented part of their market, with 37 percent of customers being students. However, around one–third of riders worked for private companies and business, and about half of these individuals were white–collar workers (mainly female secretaries). The non–captive nature of hired–motorcycle patronage is also revealed by the fact that 84 percent of customers said they could have taken a bus, panel truck, or tuk tuk for their trip instead. Still, customers are drawn from the lower–income ranks of the city's population. Around 70 percent of the surveyed customers earned less than Bangkok's median monthly personal income, 7500 Thai baht (or $220).

Motorcycle–taxi users are loyal customers – 35 percent of those surveyed rode them everyday and 55 percent did so at least 5 days a week. Most chose any driver available; only 10 percent said they have a regular driver.

Market Performance: Toward Equilibrium

The general consensus of stakeholders and knowledgeable observers in the field is that hired–motorcycle services have reached some form of market equilibrium, with supply and demand roughly in balance. The invisible hand of the marketplace, unrestricted by onerous regulations, seems to have effectively brought those willing to pay for and those willing to provide hired motorcycle services satisfactorily together.

(1) Prices:

As noted previously, the agreed–upon fare for the typical motorcycle–taxi ride is around 15 to 20 Thai baht ($0.45 to $0.60). This is less than a taxi or tuk–tuk, though more than public bus or panel–truck services.

(2) Costs and Earnings:

From the 1992 survey, it appears that Bangkok's motorcycle–taxi drivers suffer the fate of most informal transport operators worldwide – meager earnings. Table 4.4 shows that after covering the cost for market entry, loan payments for vehicles, and gasoline, the typical driver makes 105 Thai baht ($3) per day, or just 2,625 baht ($75) a month, placing them in the lower quintile of earnings among Bangkok residents. And to bring these amounts in, drivers work long hours – on average, according to the 1992 survey, 11 hours a day. Fully 82 percent of drivers work full time, with 61 percent working seven days, or over 70 hours, a week. Simple mathematics suggest net hourly earnings are only around $0.25.

As noted earlier, not all of the wealth generation from motorcycle–taxi services goes to drivers. Others with a significant financial stake include win heads and local police officers. It is the win head who amasses the entry fees, though some of this goes toward keeping police officers at bay – a *de facto* site–rent payment for the right to occupy public space at key soi intersections. Table 4.5 shows how the average *weekly* earnings of drivers were distributed among various stakeholders, drawn from two different surveys – one in 1989 and one in 1992. The table shows that between 36 and 43 percent of driver earnings went to win heads and that around 20 percent of what win heads brought in was in turn passed on to local police. Given the average win size of 25 members, using the 1992 data it is estimated that win heads averaged slightly more than 10,000 Thai baht (US$300) in fee income from drivers, and around 2,000 of this (US$60) was used to pay–off police. These bribe figures are at the lower end of one study that estimated monthly bribes to the police to range between 1,500 (US$45) and 30,000 baht (US$900).[19]

Table 4.4. Average Driver Earnings, Motorcycle–Taxis, in Thai Baht, 1992

	Daily*	Monthly**	Percent of Total Revenues
Total Revenues	287	7175	100.0
Total Costs	182	4450	63.4
– Gasoline	50	1250	17.4
– Pay off loans	83	2075	28.9
– Renting jacket	21	525	7.3
– Win fee	12	300	4.2
– Other* **	16	400	5.6
Net Income	105	2625	36.6

Notes:

* Daily data were based on an assumed average workday of 11 hours.
** Monthly data were based on an assumed average of 25 workdays per month.
*** "Other" costs include motorcycle maintenance and payments to police fee when pulled over for alleged violations.

Source: S. Prayochvnich, *A Study of the Appropriateness of Transportation by Using Hired–Motorcycle Services in Metropolitan Bangkok.* Bangkok: Chulalongkorn University, Department of Urban and Regional Planning, unpublished master's thesis, 1992.

Table 4.5. Weekly Earnings of Stakeholders of Motorcycle–Taxi Services, Thai Baht, 1989 and 1992

	1989			1992		
	Income	**Cost**	**Net Earnings**	**Income**	**Cost**	**Net Earnings**
Driver	1381	784	597	2705	1715	990
% of Income	–	56.8%	43.2%	–	63.4%	36.6%
Win Head*	52	11	42	103	21	82
% of Income	–	20.7%	79.3%	–	20.7%	79.3%
Police**	11	–	11	21	–	21

Notes:

* Win Head's income was estimated from win fee only.
** 1992 estimates of police income were based on the 21 percent of win head's income from Kasemsukworarat's work.

Sources: N. Kasemsukworarat. *The Economic Analysis of Hired–Motorcycle Service in Bangkok,* Bangkok, Thammasat University, School of Economics, 1990; S. Prayochvnich, *A Study of the Appropriateness of Transportation by Using Hired–Motorcycle Services in Metropolitan Bangkok.* Bangkok: Chulalongkorn University, Department of Urban and Regional Planning, unpublished master's thesis, 1992.

(3) Accidents and Safety:

Market performance can also be assessed in terms of accident records since safety is a primary concern of unregulated motorcycle–taxis. While no in–depth research has been conducted on the safety records of Bangkok's hired motorcycle, insights can be garnered from several different sources. A 1990 study of all motorcycle accidents in Bangkok is especially revealing.[20] The study found that among those admitted to hospital from motorcycle accidents, victims were disproportionately male (92.7 percent), young (40.8 percent between 14–24 years old), and did not wear a helmet (85.7 percent). These demographics are thought to closely mirror those of accident victims of motorcycle–taxi services, though the incident of helmet–wearing is thought to be much higher for hired services, in part because of the tendencies of win heads to strictly enforce rules that members and their customers wear protective helmets.

Safety and indemnification are legitimate concerns for Bangkok's motorcycle–taxi sub–sector. The 1992 survey disclosed that one third of motorcycle drivers had gotten in an accident within one–year's time. This is a higher incidence than the accident rate of Bangkok's entire motorcycle–owning population, though this is expected given the higher level of exposure of full–time motorcycle drivers.

Alarmingly, few motorcycle drivers and customers have insurance protection. From the 1992 survey, only 7 percent of motorcycle–taxi operators had life insurance and even less had any form of liability insurance. Customers were more likely to be covered by insurance – 31 percent had liability coverage (though this means 69 percent did not, and quite likely nor did their driver). Clearly, given the high risks and accident potential, Bangkok's motorcycle–taxi sub–sector is substantially under–insured.

(4) User and Public Attitudes:

Market equilibrium and performance conditions are also reflected by public attitudes. Customers seem generally happy with service levels and price. The 1992 customer survey revealed that 71 percent felt fares were reasonable and 57 percent believed the supply of motorcycle–taxis was sufficient.

User attitudes give further evidence that safety problems abound within the unregulated motorcycle–taxi industry. The primary complaint of customers is that drivers drive too fast and recklessly (43 percent of respondents) and unsafely (80 percent). Two–thirds feel services should be improved, mainly with respect to safety practices, although 57 percent of the respondents reported never have had any trouble in their experiences with hired–motorcycle services.

The public at–large, on the other hand, seems to be more concerned about the traffic–clogging impacts of motorcycle–taxis than about safety issues. From the pedestrian intercept survey, nearly three–quarters of respondents complained that motorcycles block traffic and are excessively noisy. Still, 73 percent felt services are important for Bangkok and 77 percent felt they should be continued, more or less in their current form. However, when pressed about public oversight and control, 82 percent of the respondents felt that motorcycle–taxis should be registered. And a comparable share –81 percent – felt that third–party insurance coverage was important.

4.5.4 Commercial Vans

Two separate surveys provide detailed insights into the market characteristics and performance of commercial van services in greater Bangkok: one, a 1997 survey of around 2,200 van users along 44 separate routes, the other a much smaller 1998 survey of 143 riders from two of 60 van routes that serve the northern part of Bangkok, done as part of a master's thesis.[21] These survey results, as well as field interviews conducted as part of this research, are used to characterize metropolitan Bangkok's commercial van marketplace.

The Supply Side

(1) Service Levels:

As discussed earlier, commercial vans serve long–haul journeys, on average 20 to 30 kilometers in length, and predominantly during commute hours. During peak hours, vans depart from major pick–up points in whatever time it takes to load 14 passengers, sometimes as often as every two minutes.

From field interviews with eight different van operators at Victory Monument, it was found that vans vary in age from 1 to 8 years, and as second–hand vehicles, cost between 600,000 and 800,000 Thai baht ($17,200 and or $22,900) each. So as to attract a middle–class market for a premium fare, all vans have air conditioning, relatively comfortable seats, and sometimes plush interiors. Some stand out for their elaborate stereo sound systems.

(2) Driver Characteristics:

Commercial van operators are universally men, typically in their thirties. Most have families. Also, most van operators own their own vehicle. Because business are profitable, it is not difficult for operators to secure a commercial–rate loan to buy a van. At some wins, van owners lease their vehicles to operators for a set monthly salary, plus a supplemental amount per trip (normally 10 to 15 baht extra per trip). While relatively few van owners lease their vehicles exclusively as a side–line business, some do lease their "plates" – i.e., the entitlement to operate a van out of a particular depot. Appreciable numbers of operators appear to moonlight; for example, several van operators who were interviewed were full–time college students who drove vans during commute hours only.

Drivers average eight runs per day, carrying on average 10 to passengers per trip. Hours tend to be long, usually 10 to 12 a day, 5 to 6 days a week. Much of their time is spent lined up in a queue, waiting for their turn. Most of those who moonlight provide peak services only. Among full–time van operators, many run special for–hire, or charter, services during the midday and on weekends.

The Demand Side

(1) Trip Characteristics:

Compared to motorcycle–taxis, commercial vans serve more homogenous markets –typically, home–based school and work trips that are radially oriented. Many riders are middle–class office workers and college

students who commute between their suburban residences and suburbs and central–city jobs. As noted earlier, however, cross–town van services are on the rise as metropolitan Bangkok continues to expand outward.

Survey results suggest some asymmetry in van usage, especially among students. Many students ride vans inbound in the morning when they are in a rush to get to classes. For the return trip home, however, they save money by taking public bus transport.

In commute–market characteristics of van services are revealed by trip purpose data, drawn from the 1997 survey of some 2,200 customers during the morning peak: to school – 39 percent; to work – 38 percent; personal business (including shopping) – 13 percent; and other – 9 percent.

From the smaller survey of van users, information on how they reached vans and eventually got to their destinations was provided. Data were collected from users at both in–city (Victory Monument) and suburban locations at all times of the day, thus from these data it is not possible to generalize about patterns by place or time. Still, Table 4.6 shows that most customers reached and left van depots by foot. Overall, walk–van–walk trips constituted 30 percent of trips; next most common was walk–van–bus (23 percent).[22]

The average times for van access and egress were 16 minutes and 13 minutes respectively, reflecting the predominance of feeder connections by foot. Adding this to the average time spent in the van of 41 minutes reveals that the average door–to–door travel time for van travel was 1 hour and 10 minutes – not a bad commute for long–distance movement by Bangkok standards.

(2) User Characteristics:

The 1997 survey of some 2,200 van customers passengers revealed most were female (64 percent) and between the ages of 15 and 30 years (76 percent). Students (college and grade–school) made up 46 percent of ridership, followed by those working for private companies (32 percent). The average personal income was just 6630 Thai baht (US$190) per month, though this average was deflated by the large share of students.

Table 4.6. Modes of Access to and Egress from Commercial Vans, 1998

Mode:	***Access:* home to pick–up point**	***Egress* drop–off point to destination**
Walk	41.7	58.8
Bus	34.0	19.2
Motorcycle	5.1	9.6
Van	7.1	7.7
Private Car	5.1	0.6
Other	7.0	4.1
Total	100.0	100.0

Source: B. Eamsupawat, *Factors Influencing the Use of Van Services in Northern Bangkok,* Bangkok, Chulalongkorn University, Department of Urban and Regional Planning, unpublished master's thesis, 2000.

Customers are generally considered to be from Bangkok's ranks of the middle class, reflected by the fact that two–thirds of customers came from households that owned private motor vehicles.[23] Compared to motorcycle riders, then, higher shares of van customers appear to be choice riders. Evidently, while many car owners will not ride motorcycles, many will ride vans because of their perceived greater safety.[24] Van customers are also generally regular users – on average, riders took vans 5 days per week.

The smaller survey of 143 van users, drawn mainly from the northern suburbs of Bangkok, yielded similar survey results, and provided additional insights into the ridership make–up and rationales for van usage. That survey found that women are disproportionately drawn to commercial vans because they feel safer than aboard public buses or motorcycles. Vans are liked because they are considered faster, more reliable, and provide good service connections.

This smaller survey also disclosed that if they did not patronize a van for the particular trip they were making, one–half of the respondents would have taken a public bus instead, and fully 20 percent would have driven. The degree to which vans have siphoned customers from formal bus operators depends on the level of car

ownership (Table 4.7). Before regularly using vans, 85 percent of those from households without cars said they previously used buses for their trip; 11 percent hitched rides with others by car, and 4 percent took taxis or tuk–tuks. Among those from car–owning households, 43 previously took bus and 27 percent traveled by private car. Clearly, vans have taken customers away from public transit, which as discussed later, has been cause for alarm among Bangkok's transit authorities. However, vans have also removed considerable numbers of cars from Bangkok's crowded streets. Indeed, a reasonable estimate is that vans take away more than 30,000 cars from the busy sois and thoroughfares of greater Bangkok each day, a number that is steadily rising.[25]

Table 4.7. Modal Split Implications of Informal Van Services in Bangkok, by Car Availability in Household

	Previous Means of Transportation	
	Public Bus	**Private Car**
No Car in Household	85%	11%
Car in Household	43%	27%

Source: B. Eamsupawat, *Factors Influencing the Use of Van Services in Northern Bangkok,* Bangkok, Chulalongkorn University, Department of Urban and Regional Planning, unpublished master's thesis, 2000

Market Performance: Seeking Equilibrium

Compared to motorcycle–taxi services, there is far more disequilibrium in the largely unregulated commercial van sub–sector. On balance, demand exceeds supply, evidenced by long queues at many pick–up point during rush hours. Demand for long–haul, especially cross–town, travel continues to grow and the supply of vans struggles to catch up. This is further underscored by attitudinal survey results that reveal the number–one passenger complaint about commercial vans is the lack of frequent enough services.

(1) Prices:

Van fares varying by trip distance. In 1997, the natural workings of the market produced an average one–way fare of 31 baht ($0.90). However, because demand generally outstrips supply during rush hours, average fares have been steadily inching upwards, especially at the busiest win locations.

(2) Costs and Earnings:

Bangkok's commercial van operators earn more than motorcycle drivers and, ignoring fringe benefits, more than public transit operators. In 1999, a typical van run yielded 240 baht ($7) in revenues, which minus the 55 baht ($1.60) freeway toll left a 185 baht ($5.30) income.[26] With an average of eight runs per day, the daily take–home pay of most drivers came to around 1500 baht ($43). Less active routes likely bring in considerably less, perhaps as low as 600 baht per day ($17).

Net earnings, of course, are less than these amounts, reduced by fuel and maintenance expenses, vehicle depreciation and debt service, and dues paid to win heads. One study estimated net profits of 0.30 baht per person per kilometer, which given an average of 1,750 person–kilometers of service per day yields a net daily intake of around 525 baht ($15).[27] This suggests monthly earnings of 12,600 baht ($360), placing van operator in the lower–middle–income ranks of Bangkok wage earners.[28]

(3) Accidents and Safety:

Accidents and safety do not appear to be a significant concern, in part because significant portions of commercial van journeys take place on grade–separated, limited–access freeways. Still, significant shares of van owner–operators are thought to have little nor no liability insurance.

(4) Public Attitudes:

From the small–sample survey of van users, the primary reason given for taking vans –stated by 78 percent of all respondents – was travel time savings. Riders generally gave van services a positive rating. Still, many felt there was room for improvement, with 39 percent calling for more frequent services, 18 percent wanting

better quality vans, 13 percent asking for better terminal conditions, and 10 percent considering drivers to be discourteous.

The affinity of Bangkokians for van services is reflected by comments from a recent poll the *Bangkok Post* conducted on the newly opened Skytrain. In explaining why she would continue to ride a van instead of Skytrain, one college student explained: “I go to college in the morning by van which picks me up at home and takes only 45 minutes to Chulalongkorn (University). Though I have to leave home at 5:45 a.m. to avoid bad traffic, it costs 30 baht (compared to 40 for Skytrain), takes 45 minutes, and I get a comfy seat! A fair deal I think!”[29]

4.6 Organization and Management

This section reviews the organizational structure of Bangkok’s informal transport sub−sector in greater depth. Fairly formal institutional arrangements have evolved for managing and self−policing Bangkok’s informal transport sector. All services, whether pedicabs, vans, or motorcycles, are territorially defined. Most sois have their own motorcycle co−op, or win. In the suburbs, pedicab and motorcycle wins can be found side−by−side. Van cooperatives usually occupy different spaces, normally roads near shopping districts in the suburbs and freeway staging areas in the city.

In the case of both motorcycle and van cooperatives, the head determines the supply of operators, sets work schedules, manages queues, and sets general policy. An important, though largely unspoken, responsibility of the head is to “register” with the police, specifying routes and number of operators. In practice, this means paying off law enforcement so as to keep them at bay.

Bangkok’s police department has assumed *de facto* responsibility for overseeing hired motorcycle operations. Frequently, this has taken the form of shaking down motorcycle cooperatives for bribes. Payments to police officials, and sometimes military officers, are effectively a form of site rent – protection payment for the right to congregate and occupy critical intersections where sois meet major thoroughfares.[30]

The system of police pay−offs is so fully developed that if a motorcycle route crosses into the territory of a second police precinct, operators will have to either pay bribes to police in the second precinct or have to take off their jackets every time they cross the precinct boundary. Drivers will be continually harassed until they pay the bribes.

The system of pay−offs actually extend beyond the hands of win heads and local police. Overall, Bangkok’s informal transport sector has been organized around a hierarchy based on power and influence, portrayed in Figure 4.1. Greed and graft fuel the system. Most of Bangkok’s neighborhood falls under the control of a police officer or fairly high−ranking government official, known informally as the “protector”. Protectors provide territorial protection and legitimacy. In return for the right to oversee illicit activities in different parts of the city, protectors pass on shares of their proceeds to even higher ranking public officials.

This hierarchy can also be viewed in terms of a “competition spectrum”. At the top, government officials enjoy a monopolistic position of power. Even the heads of queues, or wins, extract monopolistic profits, in the form of entry fees. It is only at the level of the operator where one finds some semblance of free−market competition. However, the organizational hierarchy extracts considerable shares of whatever surpluses workers earn. This has the effect of inducing over−competition, witnessed by problems like headrunning and unruly driving. Such behavior adds legitimacy to a government police presence, which unfortunately is all too often exploited for personal enrichment. The system of payoff−for−protection sustains itself accordingly.[31]

While in principle public authorities should be monitoring and policing informal transport services, in practice whatever organization and rationalization of services that occurs is due to the efforts of cooperatives. All wins have rules that govern who gets a customer (normally the one next in the queue), where a driver can and cannot deliver someone, how far from their stations they are allowed to travel, and general pricing policies. Some also maintain policies on maximum operating speeds and driving behavior. Infractions are dealt with internally, usually involving an initial warning from the win head, and if violations continue, severer actions are taken, including expulsion.

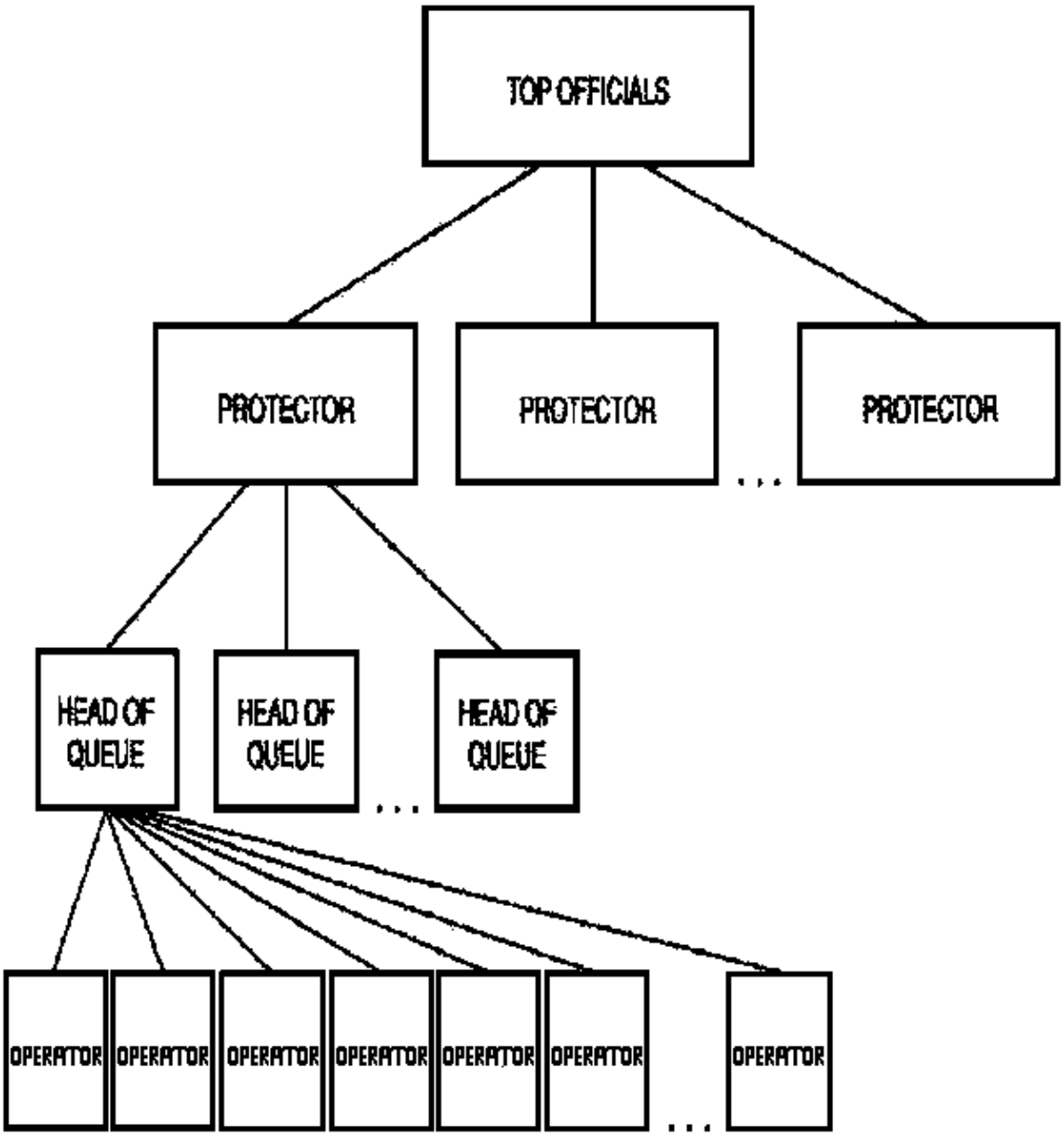

Figure 4.1. Hierarchy and Competition Spectrum of Control Over Bangkok's Informal Transport Sector

4.7 Regulatory Issues

Bureaucratic inertia and fragmentation have stymied efforts to rationalize, regulate, and govern informal transport services. Inaction is rooted in the larger problem of Bangkok's Byzantine institutional structure. More than thirty central and local government agencies are responsible for Bangkok's transportation policy, management, regulation, and operations.

Under Thailand's Land Transport Act, all for–hire, common–carrier vehicles must be licensed and registered. By law, the Thai government could use the power of registration to bring informal operators under central control, but nobody dares. Too many powerful people in government benefit from the current arrangement, thus there is resistance, *ipso facto,* to legalize informal services. According to most observers, Thailand's Department of Land Transport does not care about illegal operators as long as there is no chorus of complaints over passenger safety and fair treatment. The agency's position seems to be that passengers knowingly take risks, and consider the benefits to outweigh the costs. So far, the proliferation of informal operators has not reached a critical point, thus no action has been taken.

4.7.1 Regulation of Motorcycle–Taxis

There is some precedence in Thailand for public control of motorcycle–taxis. Thailand's Vehicle Act of 1979 expressly forbade motorcycles from being used for commercial purposes. Later, Thailand's Legal Commission

Office ruled that hired motorcycles do not violate any statutory laws, opening the floodgate for hired motorcycle–taxis.

More recently, legislation to control motorcycle services has been proposed as an amendment to Thailand's Vehicle Act. Under the amendment, hired motorcycle drivers would be required to register, have to be at least 20 years of age, and be free of criminal offenses for at least three years. The draft bill does not include measures to protect operators against extortion by public authorities or to legislate insurance coverage.

4.7.2 Regulation of Commercial Vans

While most government officials are apathetic about the need to regulate hired motorcycles, few mince words about the need to bring commercial van services under centralized control. However, concerns have more to do with protecting the welfare of a public transit monopoly, the Bangkok Metropolitan Transit Authority (BMTA), than the welfare of the riding public. BMTA has a charter to provide bus transportation services in greater Bangkok, and has charged that commercial van operators violate this charter and hurt the authority by "cream–skimming" – serving only lucrative commuter markets while leaving money–losing services solely to the public sector. Proponents also contend that regulatory fees should be collected to finance off–street van terminals.[32]

Seeing the hand–writing on the wall, BMTA has sought to take–over commercial van operators by contracting van routes to private owner–operators at guaranteed minimum incomes. Recently, the agency effectively legalized some van services by transferring 90 van routes to BMTA authority. Under the wings of BMTA, these vans are limited to operating on specific fixed routes on pre–determined timetables, and are not allowed to deviate during midday or operate on weekends. Critics charge that this will changeover will eventually weaken competition and effectively enlarge the influence of BMTA as a protected public monopoly. For the consumer, some fear, legitimization will eventually mean a poorer service at a higher price. Efforts to contract out all van operations seem to have stalled, however, in part because strong resistance from van operators who have begun to join forces in opposing proposed changes.

4.8 Case Summary and Conclusion

In a largely unregulated marketplace, a rich mix of paratransit services has evolved in metropolitan Bangkok, increasing passenger throughputs on the city's notoriously congested streets and filling gaps left unserved by public operators. Among unregistered carriers, pedicabs and motorcycles provide feeder services between trunk routes and residential enclave, operating mainly on sois. Commercial vans, which are also technically illegal, compete with public buses for intermediate and long–haul journeys. Because vans have been winning out in the competition, efforts are underway for a public takeover of these services, which in turn would be contracted out to private operators. While this would provide for greater public safety and remove more vans from overcrowded city streets, it would also likely weaken competition and eventually the premium–quality services that van customers have come to enjoy.

Surveys reveal that fourth and fifth class informal operators (i.e., pedicabs and motorcycles) serve different markets than third class systems (i.e., vans). Motorized and non–motorized cycles serve a fairly wide range of trip purposes and a more transit–dependent clientele. Vans, on other hand, are patronized mainly by choice customers from car–owning households who are heading to school or work.

Most of Bangkok's informal operators work long, hard hours, and earn modest incomes for their efforts. Pedicab and motorcycle drivers earn fairly meager incomes by citywide standards, which explains why many want to eventually go on to other jobs. Van operators fare better, achieving a lower–middle income standard of living.

Motorcycle–taxi services seem to have reached a demand–supply balance, reflected by factors like minimal wait times for services, high levels of customer satisfaction, and reasonable rates of return to operators. Commercial van services, on the other hand, are oversubscribed during parts of the day, suggesting some disequilibrium.

A system of cooperatives, or wins, has evolved for internally organizing and managing motorcycle and van services in metropolitan Bangkok. Wins are highly territorial units with their own system of rules and sanctions. The heads of wins control the supply of operators and set operating policies, however one of their primary responsibilities are to pay–off "protectors", or local police. These payments are tantamount to site

rents for the right to occupy critical corners where sois meet main thoroughfares.

Efforts to regulate informal services in metropolitan Bangkok have been stonewalled by a combination of bureaucratic inertia, apathy, and greed. An “informal” pattern of regulation has emerged that principally involves internal monitoring and regulation among members of cooperatives, or wins. For this “privilege”, however, motorcycle and van operators must pass hard–earned income to win heads who in turn pass on funds to a hierarchy of public officials.

While problems of under–insurance, over–aggressive driving, and roadway queuing and cluttering argue in favor public regulation, so far Bangkok officials have only shown interest in doing so for commercial vans. This is partly because vans have encroached into the traditional turf of public buses, having won out over buses in the competition for the lucrative suburbs–to–city commuter market. Public operators have alleged, with some justification, that commercial vans are guilty of cream–skimming. Consequently, the regional transit authority has begun to contract out a small number of services to van operators on a fixed–fee basis, and hopes to eventually increase the number, as a means of reducing competition. Regulatory fees levied against van operators would also go to purchase off–street terminals and staging areas. While public takeover of this sub–sector might produce safer services and, at least in the near term, reduce traffic congestion, in the long–run it might very well be Bangkok’s traveling public who loses out in terms of deteriorating service quality, declining efficiency, and rising public deficits.

Notes

1. PlanPro Corporation, Department of Traffic and Transport, and Bangkok Metropolitan Administration, The Final Report of the Study in Mass Van Transit, Bangkok, 1998.

2. J. Kenworthy, P. Newman, P. Barter, and C. Poboon. Is Increasing Automobile Dependence Inevitable in Booming Economies? Asian Cities in an International Context, IATSS Research, Vol. 19, No. 2, 1995, pp. 58–67.

3. J. Sussman and R. Bonsignore. Urban Congestion in Bangkok: A Framework for Immediate Action and for a Strategic Plan. Bangkok: Asian Institute of Technology, 1993.

4. P. Midgley, *Urban Transport in Asia: An Operational Agenda for the 1990s.* Washington, D.C.: The World Bank, Technical Paper Number 224, 1993.

5. Another form of private mass transit services is motor boat, or *reua,* that operate along traditional canals that connect suburbs to the old inner city.

6. A slight variation of the tuk–tuk is the *ka paw,* a converted Japanese minitruck that is found along some sois.

7. Motorcycles are registered with neighborhood police, but are not licensed by the normal licensing entity, the Ministry of Transportation’s Department of Land Transportation, as a common carrier mode. It is in this sense that they are informal. Increasingly vans are being registered, however historically since they have operated without special permits, they are treated as informal services in this study.

8. Buses are mainly operated by a state–owned enterprise, the Bangkok Metropolitan Transit Authority (BMTA). BMTA also oversees privately owned buses and mini–buses. At present there are about 6,000 regular buses *(rot may)* (4,800 belonging to BMTA), 700 air–conditioned buses *(rot air)* (450 belonging to BMTA), and 2,400 minibuses. Public bus services are always in debt. In total, buses carry around 6 million passengers daily, including around 1.1 million (or 18 percent of the total) by minibuses.

9. Japan International Cooperation Agency. *The Study of Medium to Long Term Improvement/Management Plan of Road and Transport in Bangkok.* Bangkok: Ministry of Transportation, 1990.

10. In the early 1980s, a group of low–ranking naval personnel who lived in naval housing near the port at Soi Ngamdupli, Rama IV road, initiated hired motorcycle services for some 300 households. Most residents of the area earned meager incomes and could not afford taxis or tuk–tuks. Also, night–time safety concerns prompted many parents to wait for their daughters at main–road transit stops. Naval personnel began serving this niche, chauffeuring young girls to their residences for a nominal fee.

11. N. Poapongsakorn, The Informal Sector in Thailand, *The Silent Revolution: The Informal Sector in Five Asian and Near Eastern Countries,* A. Chickering and M. Salahdine, eds., San Francisco, International Center for Economic Growth, ICS Press, 1991.

12. In 1992, there were 1,006,302 registered motorcycles in metropolitan Bangkok. By 1998, this number had risen to 1,692,288. One study shows that motorcycle ownership levels per 1000 inhabitants climbed from 35 in 1980 to 179 in 1993. See: P. Barter, *An International Comparative Perspective on Urban Transport and Urban Form in Pacific Asia: The Challenge of Rapid Motorisation in Dense Cities,* Perth, Australia, Murdoch University, unpublished Ph.D. dissertation, 1999.

13. Some motorcycle operators apparently do not belong to groups, instead opting to cruise for customers along thoroughfares. They are a small minority however.

14. The Royal Grounds (Sa–nam–luang), near the Royal Palace, is the largest transfer point in the inner city. Victory Monument (A–nu–sao–wa–ree–chai–sa–mo–ra–phom) is the largest transfer point at the northern end of the core city that lies at the terminus of the norther and northeastern highway and the tollway to the airport.

15. Van services violate these three laws. Motor Vehicle Act of 1979, which bans fixed–route commercial services (ones that collect fares) from a designation as a private vehicle; Transportation Act of 1979, which regulates commercial services; and Motor Vehicle Accident Protection Act of 1991, which requires motor vehicle owners to show proof of liability insurance at the time of vehicle registration.

16. S. Prayochvnich, *A Study of the Appropriateness of Transportation by Using Hired–Motorcycle Services in Metropolitan Bangkok.* Bangkok: Chulalongkorn University, Department of Urban and Regional Planning, unpublished master's thesis, 1992.

17. V. Boonyahotara. *Report on the Study of Motorcycle Accidents in Bangkok Metropolitan Area.* Bangkok: Office of the Prime Minister, National Accident Prevention Committee, 1990.

18. Less than 1 percent have been working more than 8 years as motorcycle drivers.

19. Poapongsakorn, *op cit.,* 1991.

20. Boonyahotara, *op cit,* 1990.

21. PlanPro Corporation, *op cit,* 1998; and B. Eamsupawat, *Factors Influencing the Use of Van Services in Northern Bangkok,* Bangkok, Chulalongkorn University, Department of Urban and Regional Planning, unpublished master's thesis, 2000.

22. The larger survey revealed a higher rate of bus access and egress – around 45 to 55 percent, compared to 19 to 38 percent for walking.

23. Household vehicle ownership among van users was broken down as: automobile – – 45 percent; motorcycle – 27 percent; and both car and motorcycle – 28 percent.

24. The smaller survey found comparably high shares of van users residing in car– owning households, but suggests many were still transit–dependent. That survey found that 77 percent of customers did not own cars themselves.

25. This estimate embodies several of the cited survey findings. Around two– thirds of van customers come from car–owning households and among these individuals, 27 percent previously got to work or school by private car. Assuming 200,000 daily customers in the year 2000, a reasonable estimate then is: 200,000 × [(0.11)(0.333) + (0.27)(0.667)] = 43,344. While some of these trips would be as passengers (instead of as drivers) of cars, appreciable numbers would be added car trips nonetheless. Additionally, the survey finding that 20 percent of van customers would drive themselves puts the number of removed vans at around 40,000 (200,000 × 0.20).

26. This is based on an average fare of 20 baht per trip and load of 12 passengers.

27. PlanPro Corp., op cit. Based on ten years of data, unit costs were estimated from the following equation: Y = .89523 – .00024(X), where Y = estimated cost per person per kilometer and X = person kilometers. This

equation suggests slight economies of scale in Bangkok's commercial van industry.

28. This is based on an average workweek of 6 days.

29. Making Tracks, *Bangkok Post,* Nov. 1, 1999; downloaded from web site: www.bangkokpost.net/01 1199.

30. The government officials who extract much of the surplus from Bangkok's informal transport sector are typically third−tier civil servants who control many illicit businesses within their jurisdiction. Their sole interest is to secure personal income, some of which goes to pay off higher level officials.

31. Bribing government officials in not considered immoral in Thailand. Historically, government officials were not paid by the king. Instead, the king would allow his officials to collect money from his subjects. See: Poapongsakorn, *op cit.,* 1991.

32. Under the proposed scheme, BWA would determine van routes and tariffs. The agency would also charge each van 13,500 baht ($385) as an initial entry fee, to be renewed every two years. Van contractors would also have to pay 1,200 baht ($35) a month to help finance offstreet terminals and parking lots.

Chapter Five: Informal Transport in a Purely Privatized Transit Marketplace: Metropolitan Manila, The Philippines

5.1 Traffic and Growth

Metropolitan Manila, like other megacities of southeast Asia, suffers horrendous traffic congestion problems. Traffic tie−ups afflict much of the region much of the day. On the area's primary loop road, the six−lane EDSA, traffic crawls at an average speed of 12 kilometers per hour. Between 1983 and 1996, average automobile travel time in the region rose from 42 minutes to 53 minutes, one of the highest figures anywhere.[1] Conditions are especially bad during electrical brownouts and monsoons, when many traffic signals stop working.

The number of inhabitants within the 636 square kilometer area known as Metro Manila has ballooned from less than 2 million in 1950 to almost 10 million today. Car traffic has grown at an even faster rate. Since 1990, the number of registered vehicles has risen at an average annual rate of 10 percent.[2]

Filipinos are drawn to Metro Manila for the economic opportunities it provides, attested by the fact that it has the lowest rate of poverty in the country.[3] This has set the stage for an influx of low−skilled ruralites to the nation's primary city, a sure recipe for the proliferation of informal transport services.

Mass transportation plays a prominent role in the mobility of Manileños. In 1990, 62 percent of all motorized passenger kilometers took place on mass transportation vehicles, the third highest level in Asia, only behind Hong Kong and Tokyo.[4] This was a far higher rate of mass transit usage than found in southeast Asia's other two large megacities, Jakarta and Bangkok.

Most mass transportation services in Metro Manila operate on surface streets, competing for scarce road space with cars and other traffic. Competition is heightened by the privatization of public transport services. Operators actively vie for customers, resulting in ultra−aggressive and unruly driving behavior and all−too−often, chaos on the streets.[5] Mass transit vehicles often delay traffic by stopping in the middle of the road to let passengers board and alight. Congestion has gotten so bad that the region imposed a odd−even number scheme in 1996. All motor vehicles, excluding commercial trucks and emergency vehicles, are banned from all Metro Manila streets from 7 a.m. to 7 p.m. one day a week based on the last digit of their license plate number.[6]

5.2 Privatization of Public Transportation

Metro Manila's public transportation system is notable in that the private sector provides all services. While privatization has brought about efficiencies and relieved government of subsidy burdens, it has also produced an environment of seemingly free−for−all competition, contributing to chaos and congestion on the road.

It is for this reason that the national government has sought to tighten the regulatory noose on all private service providers, with a fair degree of success. Authority to operate a for–hire service is controlled through a franchising system. Most commonly, franchisees own a single vehicle. In 1998, there were 437 bus operators in Metro Manila with around 10,000 vehicle units and 1,016 franchises. Much larger are Manila's ubiquitous jeepneys (described below): 58,000 operators with 59,600 franchises and 89,300 vehicles.

The truest forms of informal transport found in the Philippines are the aboriginal modes. Filipinos have a long tradition of figuring out low–cost yet effective ways of moving around cities and the countryside. After the second world war, enterprising Filipinos began converting surplus U.S. Army jeeps into minibuses, producing an efficient, low–cost form of urban mass transportation – the venerable *jeepney,* today a cultural icon of Filipino society. Jeepneys are today "formal" modes in the sense that most, though not all, are fully certified and registered. Still, the Philippine's informal transport sector continues to thrive, though often hidden in the background. Go to the railroad tracks in one of Manila's poorer neighborhoods today and you will find several hundred teenagers and young men pushing bamboo trolleys that carry school kids, college students, and women returning home from shopping. And in the countryside, hundreds of industrious farmers have attached carts to the same plows they use in the field to harvest crops, creating a unique farm–to–market mode, called the *kuliglig.* While these indigenous modes raise serious concerns over public safety, they nonetheless stand as among the most ingenious and resource–efficient forms of informal transport services found anywhere.

While the most prominent forms of private transport services in the Philippines are registered and insured, and thus are not truly "informal", in practice significant shares of all types of public transport vehicles on the road are illegitimate in the sense they either lack proper registration, drivers have no licenses, they are uninsured, or some combination thereof. It is in this larger context that much of Metro Manila's privatized transport sector can be considered "quasi–informal".

In this section, the principal paratransit modes that have significant numbers of illegal, or what Filipinos call "colorum", services are described.[7] First reviewed are class–three route–based services: jeepneys and vans. This is followed by an examination of class four and five (mostly) taxi–like services: pedicabs, tricycles, calesas, and indigenous modes such as skates, skylabs, and kuligligs.

5.2.1 Jeepneys

Manila's ornately colored and decorated jeepneys are the mainstay of the city's transportation system, carrying around 40 percent of all passenger trips (Photo 5.1). Jeepneys operate on fixed routes, stopping just about anywhere for customers who board at the rear of the vehicle and sit sideways on benches. They seat between 14 and 26 passengers, and on the busiest routes sometimes 30 or more are squeezed aboard.[8] Jeepneys are popular because they are cheap, operate virtually all the time, and stop and pick up anywhere. Their intermediate sizes are also an advantage – they come by frequently and compared to buses can more easily navigate Metro Manila's disjointed road network. In traffic, jeepneys are more fleet–footed than buses, better able to accelerate, stop, and discharge passengers.

Today, around one–quarter of jeepneys are thought to be unregistered.[9] Colorum jeepneys stick to main thoroughfares. Many unregistered jeepney operators pay fees to authorized franchise–holders for the tacit right to operate, a practice known as the "kabit system".

Functionally, jeepneys both compete with and complement Manila's bus and light–rail services. Around 65 percent of bus trips are over 7.5 kilometers in length while an equal share of jeepney trips are under 5 kilometers.[10] While some jeepney routes parallel Manila's light–rail corridors, their finer grain coverage (e.g., ability to stop anywhere) and generally cheaper price provides greater service–price differentiation. And compared to conventional buses, research shows Manila's jeepneys cost 16 percent less per seat mile and generally provide a higher quality service (e.g., greater reliability, shorter waits) at a lower fare.[11] Recent research also shows no economies of scale in jeepney operations.[12]

5.2.2 Vans: Tamaraw FX

Commercial vans are the newest addition to Manila's paratransit scene, first appearing in 1994. Most are Tamaraw FX vans, made by Toyota, and go by the initials "FX". Vans seat 10 passengers – two in the front, four in the back, and four on the sides. They surfaced to serve a market niche – namely, to provide comfortable and reliable services to professional–class office workers in the Makati area, Metro Manila's major employment center.[13] Within six months of their 1994 debut, hundreds of unlicensed, private vans were shuttling Makati office workers to major depots and drop–off points.

Compared to public bus and even jeepneys, FX services are considered faster, more comfortable, and more convenient. Tamaraw FX's have air conditioners, a much–welcomed feature in hot, muggy Manila. For such perks, customers pay a premium fare. Vans have further differentiated service and price in Metro Manila's already highly differentiated paratransit sector. Operationally and in terms of service features, they represent a hybrid between taxis and jeepneys. In the true tradition of paratransit, FX services are a laissez–faire market response to an unmet mobility need. In 1998, around 20,000 passenger–carrying vans were in operation, most charging considerably more than jeepneys for same–distance services.

Photo 5.1(a). An Icon of Manila: The Colorful, Ubiquitous Jeepney

Photo 5.1(b). An Icon of Manila: The Colorful, Ubiquitous Jeepney

In years past, jeepneys were flamboyantly painted and ornately decorated, adorned with chrome plated accessories and exuberant designs and slogans. Cassette players pumping out popular tunes of the times were also a trademark. Today's version are locally manufactured pickups, usually of the Ford Fiera type, that are more standardized and less ostentatious than in year's past.

In all likelihood, each FX van contributes more to traffic congestion than any jeepney. Because doors at the back and sides must be opened and shut, boarding and alighting is slower than on jeepneys, adding seconds to the amount of time that stationary vehicles block upstream traffic. Also, doors are hinged, opening outwards into the path of other road users. And because of their left–side door designs, passengers sometimes load in heavy traffic in the middle of the road, further disrupting traffic flows.

In 1998, a law was passed that legitimized and regulated commercial vans. This was mainly in response to passenger complaints of unfair pricing, pressures from regulated jeepney operators, and growing concern about lack of liability insurance. Van operators must today secure a franchise that limits operations to designated areas, although operators are allowed to deviate routes as necessary.[14] As registered services, many today go by the name of *Megataxi* (Photo 5.2). Fare schedules are also set by fiat. The number of unregistered 'colorum' vans that continue to operate throughout Metro Mania is nevertheless thought to be substantial.

Photo 5.2. FX Vans of Manila

Several vans queue alongside jeepneys and buses near a light–rail station. Disembarking train customers can choose among many service–price options, with FX vans generally costing the most in return for air–conditioning and a more comfortable seat and traveling environment.

5.2.3 Pedicabs

In pockets of Manila and several other municipalities, human–powered pedicabs can be seen darting along local streets, hauling customers and goods. Most cities in the region, however, have banned pedicabs. Manila city allows them in several high–density areas as an alternative to the far noisier tricycles.

Physically, Manila's pedicabs are fairly unique in that they have sidecars – i.e., a carriage attached to the side of a bike frame. Some sidecars are used mainly to haul goods (Photo 5.3). During slack hours, passenger–carrying pedicabs are also often seen hauling water bottles, gasoline cans, grocery supplies, and other goods. No one really knows how many pedicabs populate Metro Manila, however one estimate placed the number at 5,500 in 1990, or around 11 percent of for–hire vehicles in the region.[16]

Pedicabs are registered, thus are technically part of the formal transport sector. Many operate illegally, however, with one survey showing that only 32 percent of the more than 500 pedicabs operating in a section of Makati to be registered.[17] In addition to granting franchise licenses, localities regulate pedicab fares. The city of Manila allows pedicabs to charge the same fares as tricycles – 2 pesos for the first kilometer and 0.5 pesos for every kilometer thereafter.[18] These rules are loosely enforced, and in practice, drivers charge considerably more, usually a minimum of 5 pesos for a half kilometer, and between 10 and 20 pesos for longer trips up to 3 to 4 kilometers.

Photo 5.3. Pedicab as Goods Carrier

Converted pedicabs haul gerrycans of water to supply street–side food markets.

The only strictly enforced government policy affecting pedicab services is that they remain on local streets. To get caught operating on a main street usually results in the pedicab being immediately confiscated. Manila also bans pedicabs from any street served by jeepneys or buses, however this law is routinely violated.

Pedicabs' chief market niche is carrying shoppers to and from public markets. Women use them more than men. Pedicabs are particularly popular when it floods during monsoon season. They are safer than foot travel (since pedestrians risk falling into manholes) and can negotiate streets that are impassable by motorized transport, including buses and tricycles.[19] During floods, they charge a premium fare, sometimes 10 times their normal rate. According to one study: "the inadequate drainage infrastructure in metro Manila helps support the survival of pedicabs".[20]

5.2.4 Tricycles

Tricycles are motorized pedicabs – i.e., motorcycles with sidecars. Like pedicabs, tricycles are used for short–haul journeys, often as feeders between residential areas and commercial districts. Many swarm around jeepney terminals in search of customers (Photo 5.4). Currently, there are an estimated 34,000 tricycles in Metro Manila.

Photo 5.4. Tricycle Queue

Operators line up for customers on a side street near the Philcoa Terminal, a major bus–jeepney–FX van transfer point in Quezon City.

Tricycles are franchised and licensed by local municipalities, and in this sense they are not informal, though many vehicles fail to meet minimum insurance requirements.

Tricycles are much disparaged for being noisy and unsafe.[21] Several jurisdictions, including the city of Manila, have banned them altogether, preferring pedicabs instead. Presently, ten cities and three municipalities in metro Manila permit tricycle operations.

5.2.5 Calesa

A traditional mode of transport, found principally in downtown Manila, is the horse–drawn carriage, or *calesa* (Photo 5.5).[22] A century ago, calesas were Manila's main means of conveyance, however today there are relatively few still around mainly because of the high cost of upkeep. Like pedicabs, calesas serve short–distance trips and are hired to haul goods. They are also used for sightseeing in the old walled district of Intramuros. Manila's Chinatown is their main hub. Many older Chinese residents prefer horse–carts as a traditional and dependable mode. One study estimated that calesas made up 16 percent of all road vehicle counts in the Chinatown area.[23]

5.2.6 Indigenous Modes

In keeping with the Filipino tradition of resourcefulness and ingenuity, several truly unique forms of informal transport services have emerged in recent times. One is the "trolley taxi", also known as *skates* (Photo 5.6). Stakes are bamboo platforms mounted to light–metal frames, or trolleys, that have been rigged with roller skate wheels that glide along commuter railroad tracks. They are found mainly along a section of tracks in the low–income neighborhood of San Juan that connects several retail districts. Squatter settlements abut the tracks, providing a ready–made market of transit–dependent customers. Skates provide north–south mobility in a part of Manila where north–south streets are limited in number and highly congested.

Photo 5.5. Calesa Manila's Horse–Cart Services

Most calesas are leased out to a driver who is responsible for feeding and providing water for his horse. Calesa horses work on average around 30 years.

Skates are powered by foot, with one or two young men pushing customers sitting sideways on benches. Currently, there are some 200 skate operators. Each trolley platform carries up to eight passengers. Passengers pay 2 pesos for a typical 1 to 2 kilometer trip. Housewives doing shopping chores, college students, and school–age kids appear to make up much of the customer base.

Skates are able to co–habitate railroad tracks with commuter trains seemingly without a hitch. When a Philippine National Railways (PNR) commuter train is nearing the stretch where skates operate, train engineers blow their whistles as a warning and slow down in anticipation of skates on the tracks. Skate operators know how much time they have to lift their platforms off the track. The skate vehicle is stopped, customers proceed to get off and stand to the side, the operators lifts the light–weight trolley off the track, and the commuter train gingerly passes by. The trolley is placed back on the tracks, customers load back on, and services re–commence. It all operates smoothly, and to date, there no train–related accidents have been reported.

Photo 5.6(a). Indigenous Transport Services: Manila's Skates

Photo 5.6(b). Indigenous Transport Services: Manila's Skates

Photo 5.6(c). Indigenous Transport Services: Manila's Skates

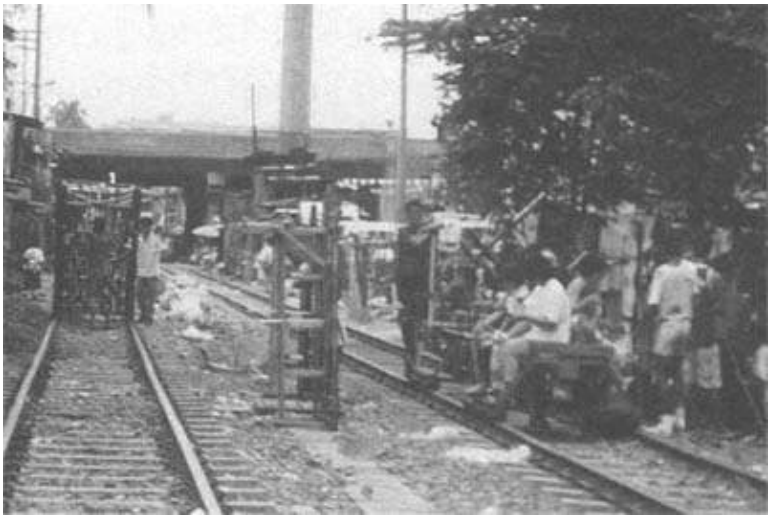

Photo 5.6(d). Indigenous Transport Services: Manila's Skates

A full load of passengers board the bamboo trolley with roller skates, top left photo; a line of drivers push their skate trolleys, top right photo; skates coast alongside commuter trains, bottom left photo; drivers lift their platforms to make way for on–coming trains, bottom right photo.

True to Filipino tradition, skates have their own internal organizational structure. Most operators do not own their skate trolleys but rather lease them at a daily rent, or boundary, of 30 pesos.[24] Skate operators have also formed an loose–knit association to promote their interests.

Another clever mobility option is the *kuliglig,* a two–wheeled trailer pulled by a hand tractor. Originally designed for farmers to carry produce from fields to markets, during the dry "off–season", after harvesting, farmers began operating kuligligs as a side business to ferry people between towns. Many liken it to a motorized version of calesa. Kuligligs can reach speeds up to 30 km per hour. Farmers normally charge 5 pesos per passenger.

While resourceful and inventive, the kuliglig nevertheless poses serious safety problems. Many are not fitted with headlights, signal lights, brakelights, or other common safety features. In 1994, a kuliglig without lights or reflectors was broadsided by a bus at night, killing 13 passengers. A 1999 kuliglig mishap cost the life of a passenger and seriously injured nine others. Calls to ban or at least regulate them have generally fallen on deaf ears because rural interests strongly support kuligligs as cheap mobility options. Some farmers have resorted to hauling goods and passengers aboard kuligligs at late night because roads are generally not patrolled during those times, a practice that only increases the risk of a fatal collision.

Another idiosyncratic mode is *skylab* – 90 cc motorcycles outfitted with side–planks that seat up to 9 passengers, and when viewed from above, looks something akin to a satellite skylab. They are particularly popular in the mining areas of Mindanao island, around Kota Batao. Also found nearby in the city of Davao is the *tricy boat,* a combination tricycle and motor boat.

5.3 Paratransit Marketplace: The Supply Side

5.3.1 Service Levels

Table 5.1 shows 1983–1996 changes in the number of routes, terminals, and vehicles of Manila's principal modes of mass transportation: tricycles, jeepneys, and buses. While the population of all three classes of vehicles has risen sharply (though not as rapidly as private car ownership), the table reveals there's been a curtailment in the number of jeepney and bus routes. Heightened competition has generally prompted private operators to eliminate the least profitable routes while consolidating others.

Tricycles

Metro Manila's tricycle population has exploded over the past two decades, and today outnumbers all other types of transit vehicles. Map 5.1 shows that tricycle terminals and service areas blanket much of the region.

The inter–mixing of small, low–powered tricycles with larger vehicles has invariably caused safety problems. With maximum speeds of 40 kilometers per hour, a tricycle is a "fish out of water" when it enters a highway stream. Because it is small and may be obscured by bigger vehicles or concealed by a driver's blind spot, a tricycle is more vulnerable to collision than is a passenger car. All too often, buses hit tricycles with their right rear side when forcing themselves over. Sudden stops can also result in accidents since brakes are fitted only to the motorcycle wheels and not with the sidecar.

Table 5.1 Trends in Routes, Terminals, and Vehicles Among Major Common Carriers, 1983 to 1996, Metro Manila

		1983	1996	% Change
Tricycle	No. Terminals	276	640	131.9
	No. Vehicles	17,000	60,700	257.1
Jeepney	No. Routes	640	399	–37.7
	No. Terminals	184	210	14.1
	No. Vehicles	29,300	57,400	95.9
Bus	No. Routes	150	89	–40.7
	No. Terminals	121	35	–71.1
	No. Vehicles	4,400	9,600	118.2

Source: Metro Manila Urban Transport Integration Study Team, *Metro Manila's Transportation and Traffic Situation,* Manila, Japan International Cooperation Agency, Philippine Office, 1998.

Jeepneys

Map 5.1 shows that Metro Manila's 400–odd jeepney routes spread like a spider web throughout Metro Manila. Most routes are concentrated in older, built–up parts of the city of Manila. Today, there are over four times as jeepney routes and vehicles as there are conventional bus routes and bus coaches. Jeepney routes ranges in length from 1.9 to 30.6 km, with the average being around 7 km. Worsening traffic congestion has lowered the productivity of jeepney operations. Service quality has further slipped because of in–vehicle crowding. The Tamaraw FX has stepped in to provide a higher quality alternative. Jeepneys still significantly outnumber FX vans in part because they cheaper to own and operate.

5.3.2 Inter–modalism

The rich diversity and hierarchy of mass transportation options in Metro Manila predictably results in a fair degree of inter–modal transferring. Table 5.2 reveals that the most common interchange is between a jeepney and a tricycle, followed by jeepney–to–jeepney and jeepney–bus connections. Clearly, tricycles, jeepneys, and buses largely complement each other – tricycles and jeepneys function as feeders to high–capacity mainline jeepney and conventional bus routes.

Map 5.1. Location of Routes, Terminals, and Service Areas of Metro Manila Jeepney and Tricycle Services, 1996

Jeepney terminals are mainly congregated in the core whereas tricycle terminals are spatially more evenly distributed.

Source: Metro Manila urban Transport Integration Study Team, *Metro Manila's Transportation and Traffic Situation,* Manila, Japan International Cooperation Agency, Philippines Office, 1998.

Table 5.2. Percent of Inter–modal Transfers Among Major Public Transport Modes, Metro Manila, 1996

	FROM:			
TO:	**Tricycle**	**Jeepney**	**Bus**	**Other**
Tricycle	**0.3**	**–**	**–**	**–**
Jeepney	**31.1**	**29.5**	**–**	**–**
Bus	**7.1**	**22.2**	**1.1**	**–**
Other	**1.5**	**5.1**	**0.6**	**1.2**

Source: Metro Manila Urban Transport Integration Study Team, *Metro Manila's Transportation and Traffic Situation,* Manila, Japan International Cooperation Agency, Philippine Office, 1998, draft report.

5.3.3 Operator Characteristics

In Metro Manila, as in much of the developing world, transit and paratransit operators work hard, long hours for relatively modest earnings. In most instances, the person operating a vehicle is not the person who owns it. Most vehicles belong to proprietors, the vast majority of whom are "absentee owners" who lease their vehicles daily for a set "boundary" fee. Owners typically have full–time jobs, and lease pedicabs as a side–business. Presently, boundaries for pedicabs go from 40 to 50 pesos a day. Buses and taxis cost drivers 700–800 pesos per day, while jeepneys run in the 400 to 500 pesos range.

Pedicab Operators

Half–hour interviews were carried out with six pedicab operators, or as they call themselves, “sidecar boys”, at one of Manila’s largest indoor retail complexes, the Harrison Shopping Center (Photo 5.7). The dozen or so operators who congregated around the main exit of the shopping center were mainly young men in their twenties. All of the six operators who were interviewed had wives and kids who resided with them in Manila.

Interviews were also conducted with pedicab operators in Chinatown, a traditional district, and in Intramuros, Manila’s original walled city (Photo 5.7). Compared to the Harrison shopping center, pedicab operators in Chinatown and Intramuros were older, with some well in their 40s and correspondingly tended to serve an older clientele of regular customers. One operator in his late thirties stated he supports a family of eight children from his pedicab earnings.

All pedicab drivers interviewed stated they usually work seven days a week, typically starting at 6 in the morning and continuing till late in the evening. Operators confided that they earn only enough to provide their families with the basics – food, clothes, and shelter. Also, all were frustrated by their inabilities to build up enough of an nest egg so that they can one–day purchase their own pedicabs and free themselves of the burden of having to pay daily boundaries. At a cost of 8,000 pesos (or about US$220) for a used pedicab, most sidecar–boys would have to pay 15 pesos, or about 50 cents, each day to cover the cost of a 3–year, high–interest loan of 50 percent.[25] While this is an affordable amount, few have any funds for down payment or collateral, or credit record, and must instead depend on the good will of friends or relatives for help in acquiring a pedicab.

Photo 5.7(a). Pedicab Operators Queue at Terminals in Manila

Photo 5.7(b). Pedicab Operators Queue at Terminals in Manila

Pedicab operators at Harrison Shopping Complex (left photo) are mostly men in their twenties who migrated to Manila from southern islands of the Philippines archipelago while those operating out of the old–walled district of Intramuros tend to be older and, likewise, serve an

older clientele of inner–city residents.

At several pedicab terminals, but evidently not at all, an additional “fee” must be paid (usually 10 to 40 pesos) to local police officers for the right to operate a pedicab. This fee consumes as much as 25 percent of operators’ daily earnings. Failure to pay results in the confiscation of one’s vehicle, which then requires the operator to pay 300 pesos (US$9), or roughly the equivalent of three day’s pay, to get it back.

Peddling the streets of Manila is a tough way to make a living. All of those interviewed aspire to one day become jeepney or bus drivers. Until they can break out of the cycle of poverty, however, most are resigned to physically taxing labor hauling others to and for on the crowded streets of Manila.

Calesa Operators

Several interviews were also conducted with calesa operators in Manila’s Chinatown (Photo 5.8). Compared to pedicab operators, all were older, well into their forties. One of the interviewees was 55 years of age, and has been working as a calesa driver since his teens. Most calesa operators work every day, averaging 8 to 9 trips per day. Compared to pedicab operators, they ply their trade in a fairly permissive environment. They can take their calesas wherever they wish as long as they stay off of principal arterials, and by all accounts, they are not hassled by the police. None had to pay daily bribes, nor (for obvious reasons) was vehicle confiscation a problem.[26] While local government seems to tolerate calesas, they certainly do not promote them. For example, no off–street terminal or site has ever been provided for the horse–carriages to congregate.

Calesa services are similarly organized around the boundary system. Daily boundaries are 200 pesos for the use of the horse and carriage. By agreement, drivers must feed their horses and give them water at least four times a day. All of those interviewed stated they never have a problem meeting boundary targets. According to the operators, calesas tend to be family–owned businesses passed on through generations. Most proprietors own five or more calesas, leasing them out and sometimes operating services themselves during the most profitable periods of the day and week (often Friday and Saturday evenings).

Jeepney Operators

The best insights into who drives Manila’s jeepneys comes from an in–depth survey of 200 operators conducted in 1993. Most drivers were in their thirties and forties (62 percent), and most were married, averaging 3.8 dependents. About half of drivers were their family’s sole income earner. The survey further revealed that jeepney drivers bring in only around half the amount a typical family Metro Manila earns – around 14,900 pesos per year. For this they worked long hours – on average, 13 hours a day over 5 to 6 days per week.

By international standards, Manila’s jeepney drivers are fairly well educated, at least when compared to most informal transport operators: 69 percent have a post–primary degree, 21 percent have completed primary school, and only 5 percent have no education.

The survey also revealed that 87 percent of jeepney drivers rented their vehicles, paying an average daily boundary, in 1993 currency, of 334 pesos. With an average gross of 695 pesos per weekday, this meant that nearly half of daily proceeds go to vehicle owners. And among those who own a jeepney, the survey showed that it tends to be a small–scale business – 36 percent had just one jeepney vehicle.

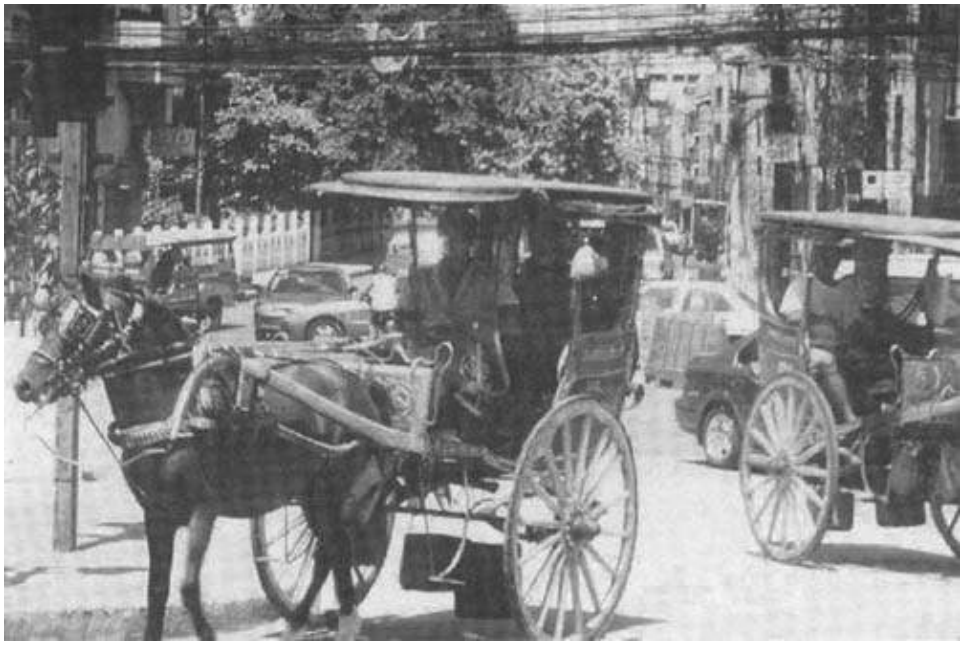

Photo 5.8. Calesa Operators in Manila's Chinatown

Many Chinese–Filipinos prefer calesa transport as a traditional means of urban mobility and as a perceived safer option than pedicabs.

Manila's jeepney industry, it should be stressed, is an very important generator of jobs in metro Manila. Accounting for the multiplier effect (i.e., ancillary jobs), one study estimated that the 15,000 jeepneys that existed in the region in 1975 supported some 300,000 Manileños, or about 7 percent of the metropolitan population.[27] Given that there are today more than three times as many jeepneys on the streets as 25 years ago, the current number of jobs stimulated by jeepney services is likely well over a half million.

Comparison of Mass Transit Operators

A more recent survey, conducted in 1996, provides comparative insights into the providers of Manila's transit services (Table 5.3). The survey of 996 jeepney drivers, 1,014 tricycle drivers, and 960 taxi drivers showed that not only jeepney drivers are fairly well educated but also those driving three–wheelers and metered taxis. Demographically, drivers are also fairly alike, generally of the same age and with similar family structures. Taxi drivers tend to put in the most hours per day however tricyclists generally work more days a week.

5.3.4 Financial Situations

The best data on operating expenses come from a 1992 survey of a number of different modes. Table 5.4 shows that pedicabs cost considerably less than all other modes to operate, a factor that has prompted some tricycle operators to revert back to pedaling customers during times of fuel–price escalation. These data ignore the physical wear–and–tear costs that pedicab drivers endure, reflected by high incidences of illness and absenteeism from being sick.

Table 5.3. Driver, Work, and Financial Characteristics of Tricycle, Jeepney, and Taxi Operations, 1996; averages unless otherwise noted

	Tricycle	Jeepney	Taxi
Driver Characteristics:			
Age	35.2	36.9	36.1
No. dependents	3.3	3.1	3.3
% high school or above	87.2	81.4	97.2
Monthly family income[1]	6,650	6,671	7,566
Work Characteristics:			
No. round trips per day	59.5	7.8	17.7
Working hours per day	10.9	13.4	14.1
Working days per week	5.6	4.7	4.6

No. years have driven vehicle	4.6	3.5	4.4
No. drivers per vehicle	1.3	1.5	1.5
Financial Characteristics:			
Gross income per weekday[1]	310	940	1,341
Operating expenses per weekday[1]	175	611	960
Net earnings per weekday[1]	135	329	381
Boundary payment[1]	100	364	579

[1] Philippine peso, 1996

Source: Metro Manila Urban Transportation Integration Study Team, *Survey Report on Bus/Jeepney Operator Survey,* Manila, Japan International Cooperative Agency, 1997.

Table 5.4 Average Annual Vehicle Operating and Maintenance Costs in Metro Manila, 1992, in Philippine Pesos*

	Tires	Oil	Fuel	Maintenance	Total	% of Automobile Cost
Pedicab	150	–	–	650	800	2.8
Calesa	250	–	–	15,000	15,250	53.0
Tricycle	850	200	11,550	2,400	15,000	52.1
Automobile	1,100	400	22,000	5,300	28,800	100.0
Jeepney	3,750	1,750	79,100	14,100	98,700	442.7
Bus	36,500	7,100	298,000	38,000	380,550	1421.4

*Does not include capital depreciation, debt services, fees, or boundaries; $1 = 25 pesos.

Source: D. Bell and C. Kuranami. Nonmotorized Vehicles In Metropolitan Manila: Return of the Pedicabs. *Transportation Research Record* 1487, 1996, adapted from Table 6, p. 96.

In terms of net take home pay, earnings seem to increase as a function of vehicle speeds and fare rates. Earning the least are pedicab operators, who according to several studies net between 85 and 200 pesos a day.[28] Field interviews carried out for this study found earnings in the range of 200 to 250 pesos per day, in 1999 currency. Driving a celesa appears to be more remunerative than peddling a pedicab, netting operators some 300 to 500 pesos a day.

Among motorized modes, the bottom part of previously shown Table 5.3 suggests tricycle operators do not net much more than pedicab operators – on average, their daily earnings seem to be around 15 to 20 percent higher. After paying for petrol, boundaries, and other expenses, jeepney drivers net around two and a half times as much as tricycle–operators and taxi drivers make almost three times as much.

A recent study that documented declining real incomes among jeepney drivers attributed this to over–supply and over–competition. Vehicle owners have managed to keep ahead of inflation in the boundaries they extract. The surfeit of willing drivers has evidently given vehicle–owners the upper hand in negotiating boundary payments.

Finding ways for drivers to get out from under the noose of daily boundary fees is key to improving their financial well–being. Several jeepney cooperatives have devised a scheme to aid jeepney drivers do just this. Under what is called the “Boundary–Hulog” system, cooperatives provide loans for vehicles at rates that are lower than those of commercial lenders. Drivers make regular payments from their gross incomes.

5.4 Paratransit Marketplace: The Demand Side

Together, Metro Manila’s paratransit modes – jeepneys, tricycles, vans, pedicabs, and calesa – served 57 percent of all journeys. While most of these trips were aboard licenced, “formal” carriers, appreciable numbers were via colorum vehicles, thus the actual market share is even higher.

Figure 5.1 reveals that jeepneys remain the workhorse of Metro Manila's transportation network. Overall, 39 percent of person trips made in 1996 were by jeepneys. While impressive, this is a smaller market share than in 1980, when over half of all trips were aboard jeepneys. The 1996 data show that both jeepneys and tricycles were most heavily patronized for school trips, followed by personal trips (including shopping). Vans were most popular for getting to and from work, capturing about 4.5 percent of the commute trip market.

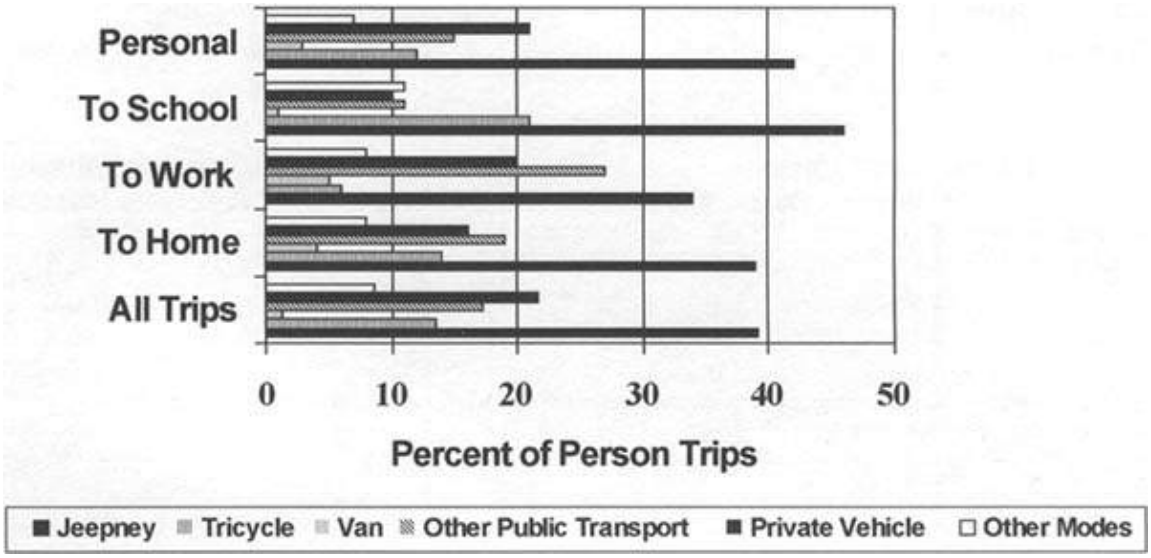

Figure 5.1. Distribution of Trips by Mode and Trip Purpose, Metro Manila, 1996.

Source: Metro Manila Urban Transport Integration Study Team, *Metro Manila's Transportation and Traffic Situation,* Manila, Japan International Cooperation Agency, Philippine Office, 1998.

Table 5.5 shows that the average travel times vary considerably among modes, as do passenger loads. Travel times have increased for all trips, and especially for taxi trips, partly because of lengthening distances but mainly because of worsening traffic congestion. All modes increased average loads between 1983 and 1996, especially tricycles which doubled their average number of passengers per vehicle.

5.4.1 Non–motorized Transport: Pedicabs and Calesas

From field interviews, drivers indicated that they serve mainly captive riders who do not own cars, frequently providing short–distance lifts of 2 to 3 kilometers from markets to customers' residences. In gridlocked traffic conditions, drivers mentioned travelers often prefer pedicabs because they are able to squeeze through traffic tie–ups and maneuver around larger vehicles that are just crawling along.

Based on the responses of calesa drivers, they evidently serve more choice travelers, though over a similar 2 to 3 kilometer trip distance. The maximum range of calesa services is around 10 kilometers.

A 1993 survey of over 100 pedicab users provides glimpses into the pedicab marketplace.[29] Shopping accounted for 57 percent of trip purposes, with the balance devoted either to going to working or returning home. Pedicab trips were generally characterized by two passenger travel (53 percent) over a 2 to 5 minute duration (52 percent) by persons from households without cars (76 percent) who patronize pedicabs four times a week (50 percent). Although it is illegal, 19 percent of surveyed pedicabs carried three passengers, often one adult with two children. The main reasons cited for using a pedicab were: "saves time" (38 percent); "did not want to walk" (34 percent); "no bus or jeepney service was available" (22 percent); and "it is more convenient" (6 percent).

Table 5.5 Changes in Travel Times and Passenger Loads, 1983–1996, Metro Manila

	Average Travel Times			Average Passengers/Vehicle		
	1983	**1996**	**% Increase**	**1983**	**1996**	**% Increase**
Car	42.8	53.0	23.8	–	–	–
Taxi	34.4	55.5	61.3	2.1	2.2	4.8

Tricycle	13.6	18.1	33.1	1.3	2.6	100.0
Jeepney	34.7	43.4	25.1	10.3	15.0	45.6
Bus	56.3	77.9	38.4	39.7	50.0	25.9

Source: Metro Manila Urban Transport Integration Study Team, *Metro Manila's Transportation and Traffic Situation,* Manila, Japan International Cooperation Agency, Philippine Office, 1998.

5.4.2 Commercial Vans

A 1998 survey of 826 van users disclosed that they were financially better off than the average Manileños, though they were still largely transit–dependent.[30] In all, 58 percent had no driver's license and 70 owned no car. Also, 34 percent were from households with annual incomes above 100,000 pesos ($3,400), the median income category. Riders were also well–educated, with 71 percent having had earned a college degree. Occupationally, 38 percent of van riders were professionals and 14 percent were clerical workers. However, only 2 percent were students, a much smaller share than in Bangkok (see Chapter 4). Also unlike Bangkok, the majority (56 percent) of van customers were male.

Commercial vans have generally drawn their customers from other transit modes than from private cars. About 48 percent previously took jeepneys regularly for their trips, and 36 percent rode public buses. Over half of all van riders travel more than 40 minutes, and three–quarters make one or two transfers before getting to their final destinations.

5.5 Performance and Policy Concerns

Over–supply and fierce competition within Manila's public transport sector have created problems like acute traffic congestion and accidents. These issues and concerns are reviewed below.

5.5.1 Congestion

Crippling traffic congestion has probably hurt Metro Manila's surface transit systems more than other modes. In 1996, average speeds were 12 kilometers per hour for buses and 9 kilometers per hour for jeepneys.[31] This is a substantial drop from the 1990 overall bus/jeepney speed of 15.4 kilometers per hour.[32] Because of declining mobility, jeepney and bus cooperatives have been forced to seriously address matters like organizing off–road terminals and vehicle staging areas. Presently, 86 percent of jeepney terminals and 74 percent of bus terminals in Metro Manila are on–street.[33]

Of course, jeepneys, vans, and buses not only suffer the consequences of traffic gridlock, but also significantly contribute to the problem. The worst congestion is at and near terminals and major transfer points where virtual warfare for customers takes place. One study of major pick–up points found that 10 out of 11 times jeepneys blocked non–curbside lanes (i.e., middle and outer lanes).[34] The author attributed this "free–stopping" behavior mainly to the boundary system which compels drivers to bring in revenues to meet their minimum targets.

5.5.2 Accidents and Safety

Traffic fatalities are an all–too–frequent occurrence in Metro Manila, where in the mid–1990s the rate was 18 traffic deaths per 100,000 inhabitants.[35] In the densest part of the region (cities of Manila and Quezon City and the municipality of Makati), most accidents claim the lives of pedestrians. Table 5.6 shows that in 1991, bicycles, including pedicabs, accounted for a disproportional share of fatalities. Calesas, on the other hand, were accident–free that year, and tricycles had a fairly good safety record, despite the common perception that they are unsafe.

Table 5.6 also reveals that jeepneys are involved in a significant share of accidents, however given the fact that they constitute well over one–third of all vehicle kilometers traveled, their safety record is fairly good. Jeepneys, however, undoubtedly account for a larger share of driving violations and indirectly probably contribute to many more accidents than are attributed to them. A more recent 1996 survey of jeepney routes found an average traffic violation rate of 2.5 infractions per month per route.[36] Among operators from 49 different jeepney routes, the average yearly frequency of non–fatal accident incidences was reported at 1.8,

with a range between zero and seven. The average annual incidence of fatal accidents was 0.07, with a range of 0 to 0.50.

5.6 Organization, Regulation. and Enforcement

The Philippines central government has made considerable headway in controlling the activities of private transport carriers, legislating market entry criteria, mandatory insurance levels, and fare structures. The complete reliance on the private sector to deliver mass transportation services has necessitated an active and visible government profile in overseeing and regulating services.

Table 5.6. Distribution of Traffic Accidents Among Vehicles and Pedestrians, by Type of Incidence, Cities of Manila and Quezon Citiy and Municipality of Makati, 1991

	Fatal	Injury	Property Damage	Total: All Incidences
Pedestrian	40.3	35.9	0.4	5.8
Bicycle/Pedicabs	4.9	1.3	0.5	0.7
Calesa	0.0	0.0	0.0	0.0
Tricycle	0.7	2.2	1.2	1.3
Jeepney	6.3	7.4	11.8	11.1
Bus	10.1	7.4	10.6	10.1
Other motorized vehicles	37.7	45.8	75.5	71.0
Total	100.0	100.0	100.0	100.0

Source: D. Bell and C. Kuranami. Nonmotorized Vehicles in Metropolitan Manila: Return of the Pedicabs. *Transportation Research Record* 1487, 1996, adapted from Table 4, p. 95.

5.6.1 Institutional Arrangements

Most paratransit services in Metro Manila involve several levels of institutional arrangement. At the most basic level is the relationship between the vehicle owner and driver. In the case of jeepneys, the vehicle owner, if he does not drive the vehicle himself, employs a driver who rents the vehicles on a daily basis for a set boundary fee. As noted earlier, the driver pays for fuel and keeps all proceeds over and above the boundary payment. The owner maintains the vehicle and pays for the licenses and insurance.

Most vehicle owners, as legal franchise–holders, have joined a route association. Both vehicle owners and drivers are members. Besides promoting the interests of their membership in the political arena, associations manage local terminals. By Philippine law, all associations must register with the national Securities and Exchange Commission.

The largest association is the Federation of Jeepney Operators and Drivers Association of the Philippines (Fejodap). Fejodap exists mainly to lobby for and advocate the interests of jeepney owners and operators. In mid–1999, for instance, Fejodap was aggressively fighting the Clean Air Act and seatbelts laws, viewed by many drivers as an additional license for law enforcers to squeeze in more *tong,* or bribe, collections from them.

Other paratransit systems have similarly formed cooperatives. Many pedicab operators belong to a Pedicab Association. The city of Manila requires all pedicab owners to join an association as a precondition to being registered. Also in existence is a Tricycle Association which oversees and coordinates tricycle services. Because of their sheer membership numbers, tricycle associations are viewed as politically powerful in many smaller municipalities throughout the Philippines. Even a Calesa Association exists to self–regulate the industry. Calesa operators pay nominal fees to support the Association, and in return receive protection from the police and potential troublemakers.

5.6.2 Regulations

In the Philippines, large passenger–carrying modes that follow fixed routes fall under the jurisdiction of national regulators. Control over smaller, flexibly routed vehicles are left to local authorities. This hierarchy of regulation is reviewed below.

Route−Based Services: Class I to III Vehicles

The national Land Transportation Franchising and Regulatory Board (LTFRB) is responsible for regulation and issuance of franchises to public utility vehicles − class one to three vehicles (i.e., buses, taxis, jeepneys, and vans) that ply fixed routes. A Certificate of Public Convenience (CPC) must be obtained from LTFRB before an operator can provide common−carrier services. Market entry is restricted to those who: can demonstrate financial capacity; own and have registered an authorized vehicle; and meet minimum driver fitness and liability insurance requirements.[37] LTFRB also sets fare levels and structures. Another requirement is that franchise−holders have an off−street terminal space. For instance, jeepney operators must have a garage or a designated overnight space at a terminal. Many fail to meet this requirement − surveys show that 19 percent of jeepneys park along public roads overnight.[38]

Those wishing to operate a new route must receive approval from LTFRB by demonstrating a market demand is being unmet. If the LTFRB agrees, a five−year franchise is granted for new proposed routes. Once a new franchise is granted for a route, no new franchises will be given for the first three years to provide some financial protection to the incumbent operator. Current policies bar any new jeepney or bus routes from being established within Metro Manila.

Taxi−Like Services: Class IV and V Vehicles

As noted earlier, the central government has devolved the responsibility for regulating small−scale taxi−like services, notably pedicabs, calesas, and tricycles, to local governments. General guidelines have been set by the DOTC to assist localities in drafting regulations for fourth− and fifth−class services. The central government has not relinquished all requirements over slow−moving vehicles, however. Federal law prohibits pedicabs and tricycles from streets with normal speeds above 40 kilometers per hour and used by 4−wheel vehicles greater than 4 tons.

Much of the responsibility for overseeing pedicab and tricycle operations lies with the village head of the barangay, the smallest political unit in the Philippines, roughly comparable to a neighborhood. Local governments set general regulatory policies, however specific rules are set at the barangay level. While federal guidelines urge localities to enforce “public convenience” standards for franchising fourth− and fifth−class vehicles (suggesting insurance and registration requirements, for example), in practice barangay chairmen routinely grant operating permits to tricyclists as political favors. Consequently, the number of tricycle operators has proliferated since regulatory oversight was transferred to the local level.

Local regulatory requirements do vary place to place. In the city of Manila, the annual pedicab registration fee is 200 pesos, roughly one day of salary, most of which goes towards licensing of the driver. In Quezon City, the fee is 300 pesos, the same as it costs to register a tricycle. In other places, registration fees for tricycles range from 250 to 400 pesos a year. In the city of Manila and Makati municipality (though not in other places), operators are suppose to obtain insurance for third−party liability of at least 10,000 pesos (US$300). In these areas, drivers must also pass a medical health examination, and both the vehicle owner and driver must provide a certificate of police clearance. Moreover, each tricycle cooperative is suppose to adopt coordinated colors for vehicles operating in its franchise areas. These requirements are not strictly enforced, however, because most pedicab operators cannot afford these expenses.

Indigenous Modes

So far, little headway has been made in regulating the truly informal transport services found in smaller towns and rural parts of the Philippines, like the 9−passenger motorcycle *skylab* or plow−propelled *kuliglig.* Operators contend they survive on threadbare profit margins and cannot afford the “luxury” of third−party insurance or extra vehicle safety features. The constituents of rural representatives also rely on these services for mobility, thus there is political resistance to regulating informal services as well. To bring *skylabs* and *kuligligs* under central government control, but not to enforce safety and insurance requirements, would be tantamount to sanctioning unsafe vehicle operations. Legislative debates continue over this matter, but to date the result has been a political stalemate and, at the end of the day, inaction.

5.6.3 Enforcement

Initiatives and efforts to enforce regulatory policies vary through Metro Manila. For pedicab violations, most jurisdictions issue tickets and collect payments on the spot (normally 50 to 100 pesos) rather than impounding vehicles (which can cost 200 to 400 pesos). While these amounts exceed the daily earnings of pedicab operators, officials feel they are still too low to discourage illegal pedicab operations.

The Makati municipality, Metro Manila's pre−eminent office address, is most vigilant in enforcing traffic laws, with a force of some 30 full−time officers who patrol the streets looking for illegal pedicabs or tricycles. In early 1998, Makati enforcers conducted a sweeping operation wherein they confiscated over 300 illegal tricycles. Most were colorums (without franchise permits) or were operating outside of their authorized franchise areas. Stiff penalties of 6,000 pesos (US$170) were imposed.

Outside of Makati, enforcement has remained lax. Enforcement officers on foot patrol are unable to catch many offenders. Violations tend to be so frequent and flagrant that fatigue has set in with many enforcement officers. The job's low pay and low prestige fail to motivate many officers to aggressively pursue violators.

5.7 Enabling Policies

Besides regulation and enforcement, the primary policy introduced to rationalize private transit and paratransit services in Metro Manila has been to designate terminal areas, mainly for buses and jeepneys. In some commercial districts, as Makati and Quezon City, tricycle parking areas have also been assigned to tricycles.

Providing off−street terminal areas is critical to reducing traffic congestion. At particularly busy locales in popular commercial districts, some bus and jeepney terminals have been located on temporarily vacant land or on space leased by landholders. This arrangement tends to be mutually rewarding as the retailers benefit from having potential customers delivered near their front doors and operators are able to more efficiently unload, pick−up, and move on.

Another set of policies aimed at promoting entrepreneurial transit services has been fare liberalization. In 1992, the Department of Transportation and Communications (DOTC) sought to enhance competition by widening the fare range that jeepneys and private buses could charge. Presently, jeepneys charge 20 pesos for the typical trip of 2 to 3 kilometers, and roughly 10 additional pesos for each additional kilometer traveled. Additionally, service standards have been relaxed. One outcome has been the importation of many old, second−hand buses to the Philippines from Japan.[39]

While these policies have sought to rationalize and strengthen jeepney, bus, and van services, to date the needs of non−motorized services (e.g., pedicabs, calesas, trolley−skaes) have been largely ignored. This is partly because the responsibility for overseeing these services lies at the local level, and quite frankly, pedicab and calesa services are not a high priority in the minds of most local politicians. When asked what would aid them the most, pedicab operators who were interviewed pleaded for a stoppage of harassment and police shakedowns. Avoiding daily bribes was preferred more than the provision of off−street terminals, easier access to credit for purchasing pedicabs, or special pedicab lanes.

5.8 Case Summary and Conclusion

Metro Manila enjoys a relatively high level of public transportation services compared to other developing cities. In fact, the level might be too high as evidenced by the many problems associated with aggressive competition and over−supply.

To a significant degree, the boundary system has sparked intense competition. To meet daily boundary obligations, many buses, taxis, and jeepneys fight to win over customers. While route associations have managed to temper these tendencies to some degree, predatory practices and over−aggressiveness still plague Metro Manila's mass transit sector. Unbridled competition have led to traffic gridlock and high accidents rates.

Despite its downside, Metro Manila's laissez−faire approach to transit service−delivery has produced an incredibly rich and diverse mix of service−price options. More so than almost anywhere, Manileños have a rich array of transport service−price options to choose from. The resourcefulness and ingenuity of the many no−frills, low−cost services is impressive. Many pedicab, tricycle, and jeepney operators exude a *modus vivendi* of improvisation, making do on sheer will and spunk. Despite the daredevil antics of some drivers, Filipinos still flock to these modes.

Among those living in squatter settlements, more primitive but effective forms of mobility have gained in popularity in recent times. Trolley−skates, super−motorcycles *(skylab),* and plow−propelled *kuliglig*s have

provided new forms of mobility to the very poor at a cheap price. So far, authorities have tolerated these indigenous modes as long as they remain largely invisible to the masses.

Formal and informal paratransit services have become absolutely indispensable in providing mobility, especially for the poor, in Metro Manila. Their rich diversity of operating features is reflected in the diversity of clientele they attract, from professionals in the case of FX Tamaraw vans, to Chinese merchants in the case of calesas, to poor squatters in the case of trolley−skates.

In addition to spillover problems like traffic congestion and accidents, the exaggerated supply of paratransit has produced poor working conditions for the service−providers. Many operators work long, physically demanding hours, and because they are in hock to vehicle owners, they generally earn meager incomes for the fruits of their efforts. Police harassment and the constant threat of vehicle confiscation only worsens matters. Policies that stimulate vehicle ownership, remove vehicles to off−street terminal and transfer facilities, and curb overly aggressive and predatory driving practices can reap significant dividends in an area of unbridled competition like Metro Manila. Some steps in these directions have come about internally, through route associations. However there must be a role for the public sector in these areas as well. A public−private alliance likely offers the most effective institutional framework over the long run for coming to terms with the problems associated with Metro Manila's highly competitive and entrepreneurial mass transit sector.

Notes

1. Metro Manila Urban Transport Integration Study Team, *Metro Manila's Transportation and Traffic Situation,* Manila, Japan International Cooperation Agency, Philippine Office, 1998.

2. These figures exclude motorcycle ownership. Compared to much of southeast Asia, the motorcycle has never been a popular mode of transportation.

3. In 1995, 16.7 percent of Manila households lived below the poverty line. The nation's highest rate was southern Luzon, where 61.3 percent of residents lived in poverty. Source: Japan International Cooperative Agency *Filipino Way − Transportation in the Philippines.* Quezon City: National Center for Transportation Studies, 1995.

4. *Barter, P., An International Comparative Perspective on Urban Transport and Urban Form in Pacific Asia: The Challenge of Rapid Motorisation in Dense Cities,* Perth, Australia, Murdoch University, unpublished Ph.D. dissertation, 1999.

5. R. Kirby M. Tagell, and K. Ogden, Traffic Management in Metro Manila: Formulating Traffic Policies, *Traffic Engineering and Control,* Vol. 27, No. 5, 1986, pp. 262−269.

6. Vehicles with the number ending in 1 and 2 are barred from roads on Monday, 3 and 4 on Tuesday and so forth. All vehicles can travel on weekends.

7. Private buses, while important parts of the mass transportation scene, are not generally examined in this chapter because, besides not being true paratransit modes, they are for the most part fully registered and formalized.

8. Also found in the Philippines, though not so much in Metro Manila, is the filcab, also known as a "mini−jitney". The filcab is essentially a four−wheel motorcycle that carries up to 11 passenger, found mainly on the island of Cebu.

9. J. Ebata, M. Apuan, J. Castro, T. Nemoto. *Jeepney Business in Metro Manila: What are the Conditions for its Sustainability?* Manila: National Center for Transportation Studies, University of the Philippines, Discussion Paper No. 16, 1996.

10. Japan International Cooperation Agency *Metro Manila Transportation Planning Study.* Manila: Ministry of Transportation and Communications, 1996.

11. G. Roth and G. Wynne. *Learning from Abroad: Free Enterprise Urban Transportation.* New Brunswick, New Jersey: Transaction Books, 1982.

12. J. Bayan, O. Villoria, and H. Ieda. Cost Characteristics of Bus and Jeepney Transport Systems in Metro Manila. Quezon City: National Center for Transportation Studies, University of the Philippines, Discussion Paper No. 6, 1995.

13. FX vehicles also started as a result of regulatory inaction – unwillingness of public authorities to franchise new jeepney routes in areas undergoing urban expansion.

14. Vans are allowed to operate under one of four different vehicle classifications: shuttle (one terminal and one destination), filicab (pick up passengers anywhere along a route, like a jeepney), shared–ride taxi (called mega– taxi), and school bus.

15. In mid–1999, fares ranged from 10 to 30 pesos (or around 28 cents to 85 cents), depending on distance traveled.

16. D. Bell and C. Kuranami. Nonmotorized Vehicles in Metropolitan Manila: Return of the Pedicabs. *Transportation Research Record* 1487, 1995, pp. 90–98.

17. Bell and Kuranami, *op cit.,* 1995.

18. In mid–1999, the official exchange rate was around 39 pesos per U.S. dollar.

19. Tricycles stall out in flooded areas and most other vehicles avoid them altogether. Because of the risks of open manholes and unsure footing, pedestrians also avoid flooded areas.

20. Bell and Kuranami, *op cit.,* 1995, p. 95.

21. With two cylinder engines and displacements ranging from 100 cc to 125 cc, they can be deafening, reaching 85 dBA.

22. Besides central Manila, calesas can also be found in the cities of Vigan and Cebu City in the southern part of the country.

23. Bell and Kuranami, *op cit,* 1995.

24. Each operator also pays 2 pesos to the neighborhood leader, called the barangay chairman, for the right to operate skates in the area.

25. One of the pedicab operators interviewed inherited his pedicab from his older brother in return for paying 100 pesos daily over a five year period.

26. In the 1970s, local government tried to ban the calesas. Following a public outcry and petition from calesa operators and Chinatown merchants, local officials backed down on their threats.

27. S. Pendakur and F. Riguera, Manila Jeepney Driver: The Man in the Middle, *Proceedings of the Transportation Research Board,* Washington, D.C., Transportation Research Board, 1976.

28. Bell and Kuranami, *op cit.,* 1995.

29. Padeco. *Non–Motorized Vehicles in Asian Cities. Part 1, Inventory of Needs and Opportunities* (Appendix: Case Studies), Washington, D.C., World Bank, 1993, pp. 7–7 to 7–13.

30. S. Kamid. *Estimating the Passengers' Mode Switching Behavior.* The Chase of Tamaraw FX, Quezon City, School of Urban and Regional Planning, University of the Philippines, Diliman, 1999.

31. E. Joson, *Current Urban Transportation Situation in Metro Manila: Problems and Issues,* Manila, Paper presented at the 10th MMUTIS Seminar on Urban Transportation Management, December 1997.

32. Barter, *op cit.,* 1999.

33. Japan International Co–operation Agency. *Update of Manila Studies on Urban Transportation (JUMSUT), Final Report,* Manila, Ministry of Transportation and Communications, 1984.

34. R. Sigua, Effects of Uncontrolled Loading and Unloading of Jeepneys and Buses on the Capacity of Signalized Intersections. Quezon City: National Center for Transportation Studies, University of the Philippines, Discussion Paper No. 12, 1995.

35. Bell and Kuranami, *op cit.,* 1995.

36. Ebata, et al., *op cit.,* 1996.

37. The minimum liability insurance requirement is 50,000 pesos (US$1,450) per passenger.

38. Ebata, *et al., op cit.,* 1996.

39. Buses imported from Japan are redesigned to place the steering wheel on the left side of the vehicle.

Chapter Six: From Becaks and Ojeks to Microbuses and Minibuses: Jakarta, Indonesia

6.1 Growth and Traffic

In and around Indonesia's capital city, Jakarta, rapid growth and poor public transport services have provided a fertile environment for the development of informal transport services. From 1961 to 1995, the city's population more than tripled, jumping from 2.9 million to 9.1 million.[1] Because of factors like proximity to lending institutions and more reliable and extensive infrastructure, much of Indonesia's industrial growth has concentrated in big cities, with greater Jakarta absorbing the lion's share. Uneven national growth has accelerated rural–to–urban migration, resulting in extreme overcrowding. Local planning capabilities and resources have been overwhelmed in the process. Consequently, urbanization has occurred in a piecemeal and haphazard fashion. Today, the metropolitan area of Jakarta extends well beyond the administrative boundaries of the capital district. Greater Jakarta, known as Jabotabek, is currently home to nearly 19 million inhabitants.[2]

Jakarta suffers from poor–quality bus transport in part because services are almost entirely road based, forced to compete with other traffic for scarce road space.[3] Jakarta's public buses average travel speeds that are 36 percent slower than regular traffic, a rate of impedance that is higher than that found in metropolitan Bangkok or Manila. Jakarta also ranks as having among the least amount of road capacity per capita[4]– in 1990, 0.14 meters of road per capita, which was only slightly higher than in hyper–dense Hong Kong.[5] It is against this backdrop that informal transport carriers of all stripes and colors have found a natural habitat in Indonesia's primary city.

There is also a supply–side reason that informal transport services thrive in Jakarta – a surfeit of young men desperate for employment. Many of the city's newcomers are uneducated and unskilled migrants who are ill–equipped for the city's highly competitive formal labor market. Also, most lack the financial capital to rent accommodations in the city's formal housing market, where rent is often paid on an annual basis. In order to meet basic needs, many in–migrants turn to the informal economy, working in informal trades and businesses, dwelling in informal housing, and relying on informal transportation to access jobs, shop and trade, and socialize. In 1993, an estimated 44 percent of working adults in Indonesian cities made a living in the informal economy.[6] With Indonesia's recent economic crisis, the share is no doubt even higher today.

Jakarta's traffic congestion rivals that of both Bangkok and Manila. Despite an ambitious tollway program and the construction of an inner–ring expressway, traffic volumes continue to outpace new road capacity. Traffic jams have brought with them lost productivity, traffic accidents, and among the worst air quality anywhere. Currently, motor vehicles are responsible for 73 and 89 percent of the city's nitrous–oxide and hydrocarbon emissions, respectively, and 100 percent of airborne lead.[7]

6.2 Jakarta's Informal Transport Sector

In response to the city's acute traffic and growth problems, a considerable informal transport sector has evolved over the years. Jakarta's paratransit offerings, which today handle over half of all motorized public

transport trips in the city, have long been rich and varied – pedicabs *(becaks),* for–hire motorcycles *(ojeks),* three–wheelers *(bajajs, bemos),* microbuses *(mikrolets),* and minibuses *(metro mini).*[8] This hierarchy of small–vehicles carriers has allowed virtually every corner of the metropolis to be reached by some form of mass transportation. It has been particularly vital in serving informal housing settlements that suffer limited road access.

Informal transport has also compensated for Jakarta's poor road hierarchy.[9] Because rivers originating in the southern mountain range flow north toward the city, Jakarta's north–south streets are well–developed, paralleling the rivers on firm soil beds. Most east–west roads, however, follow an undulating pattern, are narrow, and lack continuity. Bottlenecks are common at east–west bridge crossings. Over the years, Jakarta's paratransit sector has concentrated particularly on serving east–west flows. This is partly because major north–south thoroughfares have been banned to all but private vehicles and public buses, but also because of an unserved market. Thus, in Jakarta, paratransit has been leaned upon to increase the passenger throughput of deficient east–west passageways – that is, they have evolved as a modal response to the inadequacies of Jakarta's road system.

Table 6.1 provides an overview of Jakarta's vast network of paratransit services. While many of these services are formally registered, considerable numbers are not, though exactly how many no one really knows. All of the modes listed in Table 6.1 are operated informally (e.g., without registration) to some degree, though some (e.g., *ojek)* are more illicit than others (e.g., minibus). Modes are divided into two main groups: door–to–door, taxi–like services (classes IV and V) that serve mainly short–distance trips, especially in kampungs (poor, semi–rural neighborhoods of informal housing) on the urban fringes; and route–based, bus–like services (classes I, II, and III) that, in addition to serving poor areas, also provide inter–neighborhood and line–haul services. Taxi–like services make up around one–quarter of the region's paratransit seating capacity while route–based services comprise the other three–quarters.

Table 6.1. Paratransit Modes with Informal Services in DKI Jakarta

	Pax Seating Capacity	Average Trip Distance (km)	Est. Fleet Size (1997)	% of City's Supply of Paratransit Seats
Taxi–Like Services				
Pedicab *(becak)*	2	1.1–3.4	8,000	6.3
Motorcycle taxi *(ojek)*	1	2.1–5.3	25,000	9.9
3–wheel scooter *(bajaj)*	2	3.0–5.0	10,000	7.9
Route–Based Services				
Micro–van *(bemo, toyoko)*	6	4.5–10.0	1,100	2.6
Microbus *(mikrolet)*	10–15	5.0–12.0	6,000	29.6
Minibus *(Metro Mini)*	20–30	8.0–15.0	4,430	43.7

Sources: B. Soegijoko, Becaks as a Component of Urban Public Transportation in Indonesia, *Prisma: Indonesian Journal of Social and Economic Affairs,* Vol. 32, 1984, pp. 64–77; T. Shimazaki and M. Rahman, Operational Characteristics of Paratransit in Developing Countries of Asia, *Transportation Research Record* 1503, 1995, pp. 49–56; R. Cervero, Paratransit in Southeast Asia: A Market Response to Poor Roads?, *Review of Urban and Regional Development Studies, Vol. 3,* 1991, pp. 3–27; Kantor Statistik Propinsi DKI Jakarta, *Jakarta Dalam Angka,* 1997.

For the most part, Jakarta's route–based services are more "formalized", in the sense of having proper registration and certification, than taxi–like ones. As a general rule, formality in mass transportation services rises with carrying capacity and vehicle size.

Outside of Jakarta and other large Indonesian cities, one finds an even more varied array of passenger carriers. Virtually everything that moves, including horse–carriages (*dokar* and *delman*), bicycles *(sepeda angkutan),* and trucks *(truk angkuta),* are available for hauling haul people, goods, produce, and livestock for a fee (Photo 6.1).

6.2.1 Becak: Indonesia's Bicycle–Taxi

Over the years, one of Indonesia's most common forms of public transport has been the pedal–powered bicycle–taxi, or *becak*.[10] Becaks, which first appeared in the early 1950s, carry two passengers in a carriage compartment in front of the driver (Photo 6.2). The wheel configuration is two in the front and one in the back. Most have a folding hood that provide protection from the sun and rain. Nothing, however, protects the driver. Like a taxi, they provide door–to–door services for a negotiated fee.

Among all paratransit carriers in Indonesia, becaks are the slowest (averaging speeds under 10 kilometers per hour) and cover the smallest geographic range (usually under 3 kilometers). From the 1999 survey of 36 becak operators, the average distance of each one–way trip was 1.1 kilometers at a speed of around 10 kilometers per hour. Becaks are particularly popular for runs between kampungs and local markets. They are also used to connect to main transit routes. Accordingly, becaks complement rather than compete with fixed–route, scheduled services.

Photo 6.1(a). Indonesia's Wealth of Informal Transport Carriers

Photo 6.1(b). Indonesia's Wealth of Informal Transport Carriers

Photo 6.1(c). Indonesia's Wealth of Informal Transport Carriers

Photo 6.1(d). Indonesia's Wealth of Informal Transport Carriers

A dokar horse–carriage operates on the fringes of Cirebon, top left; bicycles used to haul bags of *beras* rice in rural Java, top right; a panel truck provides passenger lifts in rural Bali, bottom left; a farm truck hauls customers from the market to home after delivering produce in rural Riau province, Sumatra, bottom right.

Photo 6.2(a). Becak

Photo 6.2(b). Becak

Several passengers and often produce and groceries are propelled by the hard–working *Tukang Becak* driver.

After many years of gradually tightening restrictions, becaks were banished from Jakarta altogether in 1988.[11] Over 100,000 vehicles were confiscated and an estimated 40,000 were tossed into the Java Sea, purportedly to help build an artificial reef and breakwater (Photo 6.3). This Draconian action took away the most valuable and often only asset of becak owners, driving many into poverty. Some operators simply moved beyond Jakarta's city boundaries or to smaller towns in Indonesia. Even during the 1990s, when they were technically illegal, becaks could still be found plying narrow alleyways of Jakarta's poorest neighborhoods, with everything from passengers to furniture to animal livestock on board.

Because of Indonesia's financial crisis, the Governor of DKI Jakarta lifted the ban on becaks in 1997 at the urging of local social activists. The intent was to both provide cheap transportation and job opportunities for those who have borne the brunt of Indonesia's economic hardships, the poor. By mid–1999, an estimated 8,000 becaks had reappeared on the streets of Jakarta. In November, 1999, however, the ban was reinstated, purportedly on "humanitarian" grounds. In an address to the Urban Poor Coalition, Indonesia's recently elected President, Abdurrahman Wahid, defended the just–reinstated ban on becaks, contending that becak drivers work "like horses".[12] This prompted Jakarta's mayor to order authorities to "begin cleansing the city's streets of the becak", thus after a several years of acquiescence, the becak has once again been banished from the streets of Indonesia's capital city.[13] By mid–2000, tensions between becak operators and local authorities had escalated to the point where mobs torched city garbage trucks and "formal" Metro Mini buses.

In most other Javanese cities, big and small, becaks continue to thrive. Bandung's becaks are noted for their bright colors. Surabaya's services are color coordinated –blue ones operate during the day, white ones at night. Yogjakarta's becaks have names, similar to Manila's jeepneys and Nairobi's matatus (Photo 6.4).

Throughout Indonesia, becaks must be registered with local authorities and carry a registration plate. In this sense, they are not really "informal". However, in that they are an indigenous, traditional mode that serves poor households and informal housing settlements, plus the fact that none carry insurance, becaks share most the traits of informal carriers.

6.2.2 Ojek: Indonesia's Motorcycle–Taxi

A popular form of passenger transport throughout the Indonesia archipelago is the motorcycle–taxi, or *ojek*. In many small to medium size towns, especially in the outer islands, two–wheelers are the predominant means of public transport. Currently, there are around 13.5 million motorcycles in Indonesia, nearly three–quarters of the national motor–vehicle registrations.[14] Indonesia's motorcycle population has skyrocketed in the wake of recent economic woes which placed cars financially out of reach for most.

Photo 6.3(a). Demise of Jakarta's Becaks

Photo 6.3(b). Demise of Jakarta's Becaks

After they were outlawed in 1988, becaks were unceremoniously confiscated and tens of thousands were hauled out to sea and dumped. Few drivers received compensation for what for many was their only worldly asset.

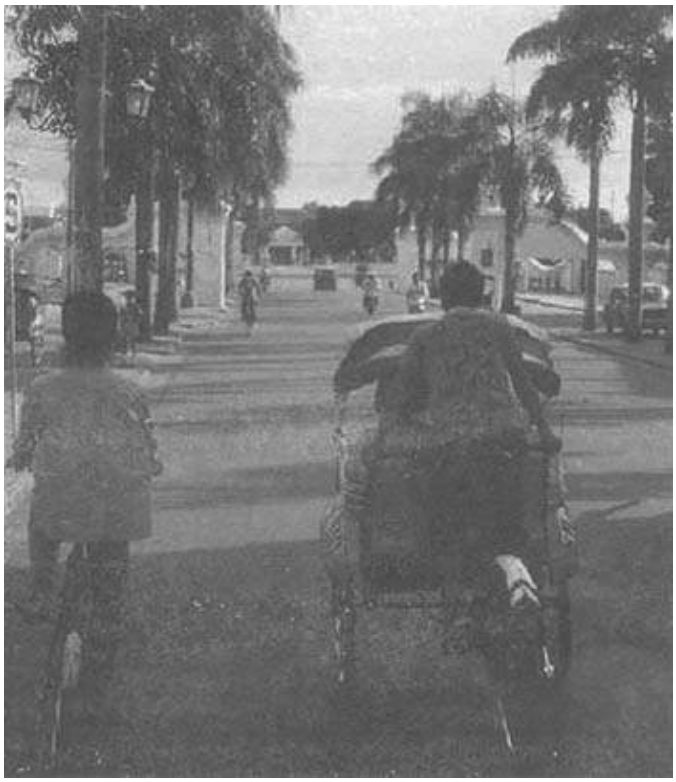

Photo 6.4. Yogjakarta's Ubiquitous Becaks

In contrast to Jakarta, becaks operate freely up and down 'Jogya's' major thoroughfare, Jalan Maliaboro. In fact, dedicated lanes are provided along main streets. Jogya's becak drivers have organized into cooperatives, and not unlike Bangkok's motorcycle operators, are

identified by color jerseys with names on them. Pride in ownership is seen in each driver's naming of his vehicle. In this photo, the becak operator heads toward Yogjakarta's stately Kraton palace.

Currently, while only one in five Indonesian households own a car, each household has, on average, 1.3 motorcycles.[15]

In recent years, Jakarta has been inundated by motorcycles. The city's motorcycle ownership rate is high by international standards – in 1998, it averaged 180 motorcycles per 1000 residents.[16] This has made the city a natural breeding ground for motorcycle–taxi services. Today, almost without exception, ojeks are found near bus depots, train stations, shopping plazas, and main entrances to residential neighborhoods. Hauling passengers for a fare has become a common side business among young men desperate to supplement their earnings. Spotty bus services, a poor road network (with many discontinuous links), and the proven ability of motorcycles to out–maneuver cars in traffic jams also explain the growing popularity of Jakarta's ojeks. Recent crack–downs on becaks have further spawned the proliferation of ojeks. While motorcycles are not banned from Jakarta's city limits, for–hire motorcycle services are, thus the ojek represents a bonafide form of informal transport.[17]

Ojeks seat one passenger, though it is not uncommon to see two or even three aboard (always, the third being a child). Like becaks, fares are negotiated for door–to–door services. Also like becaks, ojeks tend to serve neighborhoods that are not adequately covered by minibuses or micro–buses, mainly in less–dense fringe areas. Often, they queue for customers at the same intersections and entrances to small alleys as becaks (Photo 6.5). Because of their smaller sizes, ojeks can squeeze into passageways that are too narrow for becaks. They also offer speed and range advantages over the becak, operating as fast as cars and serving territories that are several orders of magnitude bigger. The 1999 survey of 36 ojek operators conducted for this study revealed the average hired–motorcycle journey was 2.8 kilometers.

6.2.3 Bajaj: Three–Wheeler Motorized Taxis

Bajajs are motorized three–wheelers that, like their non–motorized counterparts, provide neighborhood–scale services (Photo 6.6). Manufactured in India, bajajs carry two passengers on raised padded seats situated behind the driver. They provide door–to–door connectivity for a negotiated fare that, because they are faster, normally costs more than a becak ride of comparable distance. Bajajs are allowed to cross major roads but cannot travel on them. As perpendicular connectors to main lines, they function as feeder connectors in many built–up areas. Today, an estimated 10,000 bajaj ply the streets of Jakarta, each averaging 70 kilometers of daily travel. The average bajaj trip is 4 kilometers, or about 30 percent longer than the typical ojek journey.[18]

Ironically, the bajaj, now despised by the municipal government for being noisy and jamming up intersections, was actually introduced and actively promoted by local government as the intended replacement to the becak. Plans called for some 10,000 bright–orange bajajs to replace 150,000 becaks by 1980.[19] This target was achieved, however as Jakarta enters new phases of modernization and growth, all signs point toward the eventual elimination of all tri–wheel services, including bajajs.

Photo 6.5. Ojek Motorcycle–Taxis Queue for Customers

Drivers congregate near markets and kampung entrances. Most drivers work full time, though younger ones often moonlight to supplement income. Most popular are low–powered Hondas

and Yamahas.

Photo 6.6. Mix of Paratransit Modes in Central Jakarta

A three−wheel baja is flanked by mikrolets, with shared−ride bicycles and motorcycles squeezed in between.

An earlier paratransit mode of similar size and function to the bajaj was the *helicak.* Other variations of the bajaj which, like the helicak, have disappeared from Jakarta's transportation scene over past decade include the *mebea, mobet, opelet,* and *super helicak*.

6.2.4 Bemo and Toyoko: Three−Wheeler Motorized Route−Based Services

Bemos, short for *becak mobil* (motorized becak), are also motorized three−wheelers, though they are bigger than bajajs and can carry six to eight passengers in a longitudinal seating configuration (Photo 6.7). A newer version of the bemo is called *toyokos.* In contrast to bajajs and other tri−wheelers, bemos and toyokos follow more−or−less fixed routes and charge fixed fares. Around 1,100 bemos and toyokos currently operate in Jakarta. Each vehicle falls under the jurisdiction of a city district (kabupaten).[20] In this sense, bemos are more "formal" than "informal", requiring registration with the local neighborhood leader, the Bupati.[21] However, in that one might be sitting next to a cage of chickens, baskets of rambutan, and maybe a goat or two, bemos have all the "feel" and character of informal services.

Like the bajaj, the typical bemo averages 70 kilometers of daily travel. The average bemo trip is 7 kilometers, however, nearly twice as far as the average bajaj journey. Because services are not door−to−door, however, a bemo ride is often half what a bajaj costs.

6.2.4 Mikrolet: Indonesia's Micro−buses

One notch higher in Jakarta's hierarchy of route−based services are the nearly 9,000 micro−buses known as *mikrolet* (see Photo 6.6). Slight variations of the mikrolet are the *colts, kijang, koasi,* and *kab* (Photo 6.8). Jakarta's micro−buses seat ten to fifteen passengers, usually along several rows of side seats. Micro−buses mostly serve passengers traveling short distances within the core city, between the central area and suburbs, or along major commercial streets in the suburbs. They offer high frequency services for most of the day, have no standees, and are often in sight of each other.

Compared to smaller paratransit modes, Jakarta's micro−buses are fairly well organized. Most micro−bus owners belong to a cooperative, the two major ones being Mikrolet Koperasi (MK) and Kiperasi Wahana Kalpika (KWH). Presently, 5,420 micro−buses operate under MK and 3,330 belong to KWH, the principal division being that MK serves inner−city areas and KWH concentrates mainly on suburban markets. Cooperative members often own multiple vehicles, leasing them to drivers for a set fee on a daily basis. The cooperatives themselves are mainly a forum which provides strength in numbers − collectively, members feel more insulated from police harassment and can more effectively ward off non−members who attempt to encroach on their routes.

Photo 6.7. Bemo Tri–Wheeler

A motorized three–wheeler operates alongside a becak used for hauling beras, uncooked rice.

Photo 6.8 Colt Micro–bus

Side–seating allows rear boarding and unloading.

Presently, MK and KWH operate 48 urban routes and 70 suburban routes respectively Routes are generally 5 to 10 kilometers in length and mainly traverse back roads which are inaccessible by larger minibuses and conventional coaches. Mikrolets will take one to the remotest corners of the Jabotabek region.

Jakarta's municipal government exercises regulatory control over micro–buses, specifying they types of vehicles which are eligible as legal micro–buses, maximum permissible fares, and vehicle color scheme and lettering requirements. Current rules also forbid micro–buses from entering Jakarta's historical central business district. Despite these strictures, thousands of unlicensed and unregistered vans and sports utility vehicles haul customers throughout Jakarta each day, operating just like microbuses. Most noticeable are the seemingly ubiquitous Toyota Kijangs, often seen meandering up and down main commercial streets as a side–line business, similar to the FX Tamaraw vans of Manila.[22]

6.2.5 Minibuses

Since 1962, minibuses have plied the streets of Jakarta as supplements to the city's formal bus services. The main operator of minibuses is Metro Mini, a private company which owns and operates a fleet of 3,000 vehicles noted for their bright orange (and banged up) exteriors (Photo 6.9). Jakarta also has several cooperatives of minibus owners, the largest being Kopaja which presently oversees the operation of some 1,300 vehicles. The typical cooperative member owns two minibuses and hires drivers and crews to operate

them under a daily rental contract.

Functionally, Jakarta's minibuses represent a hybrid of feeder and mainline services. In many dense areas, they provide high–volume connections along narrow collector streets to main bus routes. And along heavily trafficked arterial roads, they often provide a faster, more maneuverable, and more frequent alternative to large buses. Presently, 110 minibus routes traverse Jakarta, ranging in length from 8 to 15 kilometers in length. Minibus routes blanket much of the region, including low–income settlements on the fringe where the large buses do not go.[23] Unlike formal bus services, minibuses are not subsidized yet still manage to average monthly returns on investment of 4 to 5 percent.[24]

Like micro–buses, minibuses fall under municipal regulations. Minibuses can have as many as 25 seats and must meet minimum fitness standards. Unlike regular buses, however, they are not held to timetables. They are also allowed to operate more frequently than bigger buses. Even though minibuses provide valuable transportation services to low income areas of the city without the aid of subsidies, long–range plans call for a reduction in their numbers as regular bus fleets are expanded.[25]

6.3 The Supply Side

This section examines Jakarta's paratransit sector from the supply side, focusing on the region's most "informal" services, becaks and ojeks. The results of the field survey of 36 becak and 36 ojek operators conducted in October, 1999 are used in characterizing service levels, consumer demand, and overall performance. Equal numbers of drivers were sampled from terminals in urban and suburban parts of Jakarta, meaning 18 data points were available covering the combinations of becak–city, becak–suburban, ojek–city, and ojek–suburban. Many of the statistics presented below are divided into these four categories. Readers are referred to Appendix B for more details about the survey approach and questionnaire instrument.

Photo 6.9. Metro Mini

The 24–passenger Metro Mini bus with a fare collector/hawker soliciting passengers at the rotary near Jakarta's main train station.

6.3.1 Driver Characteristics

The backgrounds, work experiences, and living arrangements of Jakarta's becak and ojek drivers differ fairly significantly. For the most part, becak drivers are more disadvantaged. Many survive day to day solely from their earnings pedaling customers to and fro.

Driver Backgrounds

Table 6.2 compares basic background characteristics of becak and ojek drivers, stratified by whether they operate out of city or suburban terminals. Most surveyed drivers were in their thirties, though the range of ages was quite large, from a 15–year old ojek operator to a 64–year old becak driver. On average, becak

drivers were around five years older than hired–motorcycle operators, despite the fact that the former is a far more physically demanding job than the latter.

While most of the surveyed becak drivers have not studied beyond primary school, the majority of ojek drivers have junior–high degrees. Forty–four percent of city ojek operators have completed high school or beyond. In–city ojek services appear to attract more highly educated workers because, as shown later, they are the most profitable.

Table 6.2. Background Demographic Characteristics of Surveyed Becak and Ojek Operators, Jakarta, 1999

	Becak *(Pedicab)*		Ojek *(Motorcycle)*		All
	City	Suburbs	City	Suburbs	
Age, average years	37.1	36.5	34.3	30.4	34.6
Education, highest level:					
None	0.0%	11.1%	0.0%	0.0%	2.8%
Elementary, not completed	16.7%	16.7%	11.1%	11.1%	13.9%
Elementary, graduated	38.9%	61.1%	22.2%	38.9%	40.3%
Junior high, graduated	44.4%	11.1%	22.2%	27.8%	26.4%
High school & above, graduated	0.0%	0.0%	44.4%	22.2%	16.7%
Where lived prior to this job:					
Rural village	72.2%	66.7%	16.7%	11.1%	41.7%
Another Indonesia city	5.6%	5.6%	55.6%	11.1%	19.4%
Jakarta, different area	16.7%	27.8%	5.6%	11.1%	15.3%
Jakarta, same area	5.6%	0.0%	22.2%	66.7%	23.6%

Table 6.2 also reveals that becak drivers are mainly rural migrants whereas most ojek drivers either originate from the same neighborhood where they operate (in the case of suburban operators) or from a different Indonesian city (in the case urban operators). Surveys from the 1980s also found that most city becak drivers migrated from outside the city and viewed pedaling passengers as a stepping stone to one–day better urban employment.[26] One study estimated the number of workers engaged in becak driving, manufacturing, and repair in the late 1970s at between 250,000 and 375,000, making up between 18 and 25 percent of Jakarta's labor force.[27] By the time major restrictions were placed on becak operations in the early 1970s, this figure had fallen below 5 percent.

A statistical model was estimated that identified factors that most strongly distinguished whether a surveyed operator drove an ojek versus a becak – the former job averaging far higher earnings than the latter, as discussed latter. The Technical Appendix to this chapter presents the best fitting model estimated using the discrete–category technique of binomial logit analysis. The model demonstrated that the odds of driving an ojek increased with both educational attainment and membership in a cooperative and fell with age. Figure 6.1 presents the results of the model in terms of the probability of driving an ojek instead of a becak across eight ordinal educational categories for those who belong and those who do not belong to a cooperative. The figure amounts to a sensitivity plot of ojek driving as a function of the two most significant predictors –educational attainment and cooperative membership. In the case of the most frequently occurring educational category of 3 (i.e., drivers who have graduated from elementary school), the model predicts that if a driver belonged to a cooperative there was a 70 percent chance he drove a motorcycle–taxi instead of a bicycle–taxi. If he was not a cooperative member, on the other hand, the likelihood fell to around 30 percent. The graph also shows that among non–cooperative members, there was only a 1:9 odds of driving a ojek among those who have never attended school (educational category 1) versus 9:1 odds if they had some degree of post–high–school education.

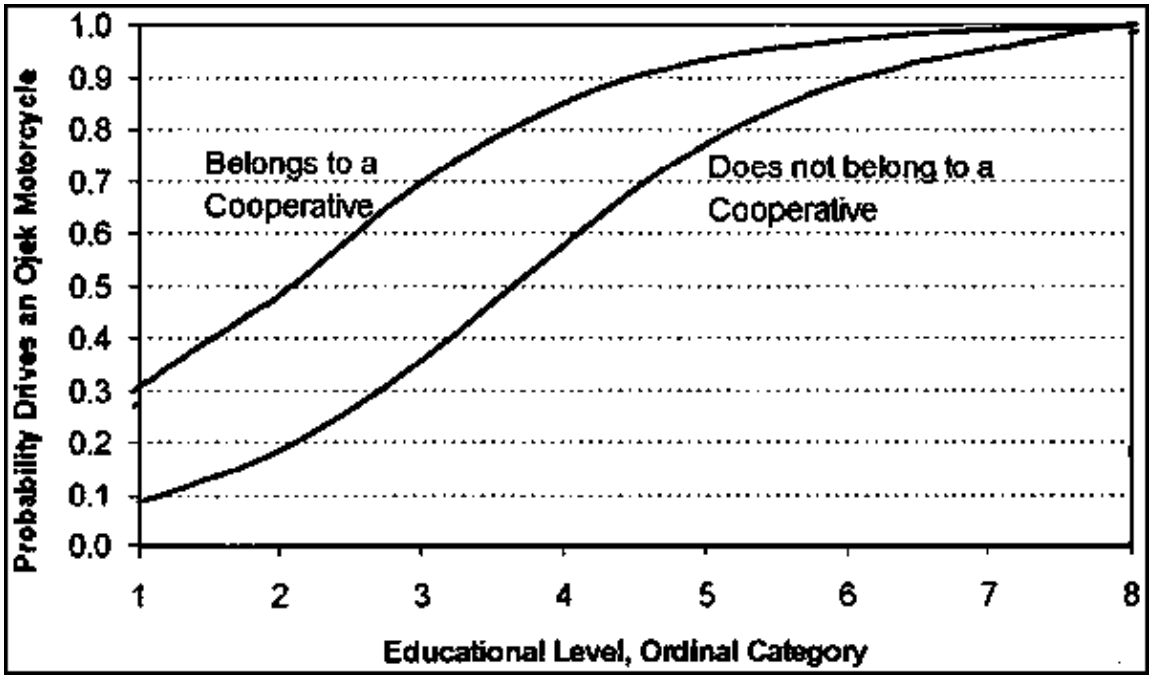

Figure 6.1. Sensitivity Plots of Probability Driver Operates an Ojek Motorcycle in Lieu Of a Becak Pedicab, Jakarta, 1999

Educational level, based on highest level of attainment, defined by these eight ordinal categories: 1 = never attended school; 2 = elementary school, not graduated; 3 = elementary school, graduated; 4 = junior high school, graduated; 5 = high school, graduated; 6 = post–high–school 1–2 year diploma, graduated; 7 = college or academy, graduated; 8 = university, graduated.

Driver Job Situations

Considerable variation is also seen among becak and ojek operators in terms of their working situations (Table 6.3). Those operating becaks in the city had not been there very long, though this mainly reflected the fact that the ban on becaks was only lifted two years prior to the survey. Many of their peers working the suburbs, on the other hand, have been pedaling becaks over a decade. The average length of tenure among surveyed ojek drivers was between 3 and 5 years. Most drivers worked at their jobs full time, though a third of the surveyed ojek drivers had another line of steady work. This is consistent with the findings of a recent survey of ojek operators in Bandung, Indonesia's fourth largest city, that found three–quarters worked on a full–time basis.[28]

Table 6.3. Background Job and Work Characteristics of Becak and Ojek Operators, Jakarta, 1999

	Becak *(Pedicab)*		Ojek *(Motorcycle)*		All
	City	Suburbs	City	Suburbs	
No. years on this job, average	1.3	11.2	3.1	5.3	5.2
Work full time, informal transport	94.4%	83.3%	66.7%	66.7%	77.8%
Prior job:					
Farmer	44.4%	27.8%	5.6%	5.6%	20.8%
Laborer	33.3%	16.7%	38.9%	44.4%	33.3%
Retailer	11.1%	38.9%	44.4%	11.1%	26.4%
Found job through:					
Family contacts	11.1%	16.7%	16.7%	5.6%	12.5%
Acquaintances	50.0%	61.1%	0.0%	33.3%	36.1%

	Own efforts	38.9%	22.2%	83.3%	61.1%	51.4%

In terms of their previous work lives, city becak operators were predominantly farmers whereas other operators came mostly from the ranks of day laborers and retailers (e.g., food stall operators). Most ojek drivers began operating their motorcycles through their own volition, whereas becak operators generally arranged their jobs through friends and acquaintances.

Driver Family Backgrounds

Most of Jakarta's becak and ojek drivers are married and have kids. The average household size is 3.5 (Table 6.4). The wives of many becak drivers live in their home village, predominantly in rural Java. In the case of becak drivers, their wives generally have higher levels of formal education, although relatively few work in Jakarta. In most instance, entire families are supported principally from the earnings made driving a becak or ojek.

6.3.2 Vehicle Ownership

Only 28 percent of the surveyed becak drivers owned the vehicle they were operating versus 86 percent of ojek drivers. This partly reflects the limited accumulation of capital assets among most minimally educated rural migrants who live in the city. Fear of having one's pedicab confiscated partly accounts for low levels of vehicle ownership among becak drivers.

Among vehicle owners, the survey showed that 88 percent owned their vehicles outright, free of any debt. Most paid for their vehicles through their accumulated savings. Among those who borrowed to purchase their vehicles, most obtained loans from the "informal" banking sector – mainly street lenders who provided credit at very high interest rates. In most of these instances, no collateral was necessary – loans were provided on the basis of trust and the understanding that through steady, hard work, drivers would continuously pay off their debts.

Table 6.4. Background Family–Life Characteristics of Surveyed Becak and Ojek Operators, Jakarta, 1999

	Becak *(Pedicab)*		**Ojek *(Motorcycle)***		**All**
	City	**Suburbs**	**City**	**Suburbs**	
Married	88.9%	88.9%	77.8%	88.9%	86.1%
Has Children	88.9%	77.8%	66.7%	66.7%	75.0%
Persons in household, average	3.7	4.1	3.0	3.2	3.5
Where wife lives:					
In home village	72.2%	38.9%	11.1%	0.0%	30.6%
Same current residence	11.1%	50.0%	44.4%	66.7%	43.1%
Wife works in Jakarta	0.0%	38.9%	16.7%	11.1%	16.7%
Wife's education, highest level:					
None	0.0%	11.1%	0.0%	0.0%	2.8%
Elementary, not completed	38.9%	11.1%	11,1%	0.0%	15.3%
Elementary, graduated	33.3%	66.7%	27.8%	50.0%	44.4%
Junior high, graduated	16.7%	0.0%	33.3%	38.9%	22.2%
Has a Child Who Works	0.0%	16.7%	5.6%	11.1%	8.3%

The Technical Appendix to this chapter presents a statistical model that predicts the likelihood a survey respondent owned the vehicle he was operating. As expected, the odds of vehicle ownership increased with educational attainment, working as an ojek (rather than a becak) driver, and membership in a cooperative. Evidently, membership in an organization of fellow ojek operators increases the odds of vehicle ownership (although the relationship works the other way as well – vehicle ownership increases the likelihood of belonging to a cooperative). Figure 6.2, which plots the sensitivity of vehicle ownership to variations in education, mode, and cooperative membership, shows quite a range of outcomes. Among those whose highest educational achievement is junior–high graduation (i.e., category number 4), there is only a 33 percent probability that they owned a vehicle if they worked as an independent becak. On the other hand, if

they drove an ojek and belonged to a cooperative, the likelihood of vehicle ownership was virtually 100 percent.

6.3.3 Service Characteristics

While both becaks and ojeks operate like taxis, they do not duplicate each other, as suggested by Table 6.5. Jakarta's in–city motorcycle–taxis average trips that are more than twice as long as in–city bicycle–taxis. Still, average fares are fairly comparable among both modes, indicating that becaks cost more to ride on a per–kilometer basis. One study found that although the becak is slightly more expensive than riding a bus, bemo, or opelet over short distances, it is cheaper and far more convenient for transporting goods and produce for petty trade over distances of two to three kilometers.[30] In general, the price–speed advantages enjoyed by ojeks over becaks explain much of their growing popularity.

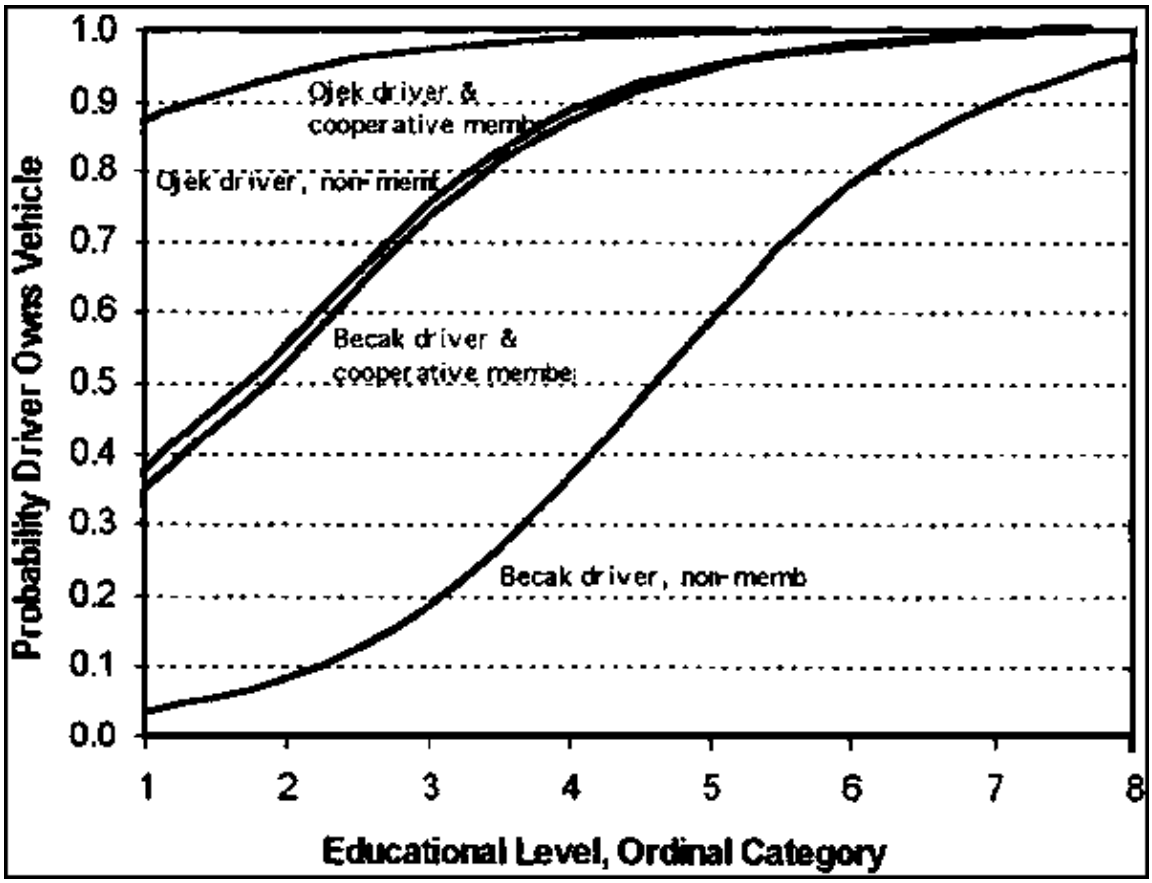

Figure 6.2. Sensitivity Plots of Probability of Vehicle Ownership, Jakarta, 1999.

Educational level, based on highest level of attainment, defined by these eight ordinal categories: 1 = never attended school; 2 = elementary school, not graduated; 3 = elementary school, graduated; 4 = junior high school, graduated; 5 = high school, graduated; 6 = post–high–school 1–2 year diploma, graduated; 7 = college or academy, graduated; 8 = university, graduated.

Table 6.5. Operating Characteristics of Surveyed Becak and Ojek Services, Jakarta, 1999

	Becak *(Pedicab)*		Ojek *(Motorcycle)*		All
	City	Suburbs	City	Suburbs	
Trip Distance:					
Average distance, kilometers	1.1	1.1	2.8	1.3	1.6
Fare for average trip distance, $	$0.24	$0.18	$0.22	$0.17	$0.20
Farthest distance, average kilometers	2.9	3.8	3.4	7.2	4.3
Fare for farthest distance trip, $	$0.49	$0.58	$0.50	$0.74	$0.57
Working hours per day, average	9.20	10.30	8.90	9.20	9.40

Cruise for customers	0.0%	16.7%	0.0%	5.6%	5.6%
Have had conflicts with other operators	0.0%	50.0%	55.6%	55.6%	40.3%
No. accidents over two prior years, average	0.00	0.00	1.61	0.72	0.58

With respect to the longest distance trips, becaks appear to operate nearly as far as ojeks within city districts; in the suburbs, however, the longest distance ojek trips log around twice as many kilometers as the longest becak trips. Long trips can cost as much as 5,600 Rupiah, or seventy–five cents, a sizable amount for many low–income urban dwellers.

Jakarta's small–vehicle taxi operators put in an average of nine and a half hours of work each day. Adding lunch and rest periods puts the average time away from home well over 11 hours. With the typical becak driver making 12 to 15 trips each day, many end up pedaling 20 or more kilometers over a single work stint.[31] Such long hours and accumulated kilometers of toiling in congested traffic takes its toll on many pedicab operators. In addition to the strenuous nature of the job, what becak drivers like least about the work are the threat of vehicle confiscation and continual harassment from law–enforcement officers.

While route–based services, such as micro– and mini–buses, serve larger geographic territories and operate at higher speeds than tri–wheelers, services are often of a poorer quality. Besides the lack of curb–to–curb delivery, the timetables of most of Jakarta's micro– and mini–buses are notoriously unreliable. Crews wait for full loads before departing terminals and dwell for extended periods at major pick–up points in order to maximize loads.

6.4 The Marketplace

Because Jakarta's paratransit operators receive no government assistance, many seek to optimize vehicle usage and passenger revenue through a variety of means. Non–essential maintenance such as exterior painting and seat upholstery are kept to a minimum and, whenever possible, vehicles are loaded up to twice their legal capacity. On a per–kilometer basis, fares tend to be higher for becaks, ojeks, and micro–buses than for bus rides. However, in return for higher prices, passengers enjoy more frequent, flexible, and convenient services, particularly those living in the urban fringes.

6.4.1 Patronage

Jakarta's paratransit carriers serve mainly non–car–owning, low–income populations. Middle–income, "choice" customers also take becaks, ojeks, and bajajs for short–hop trips to main bus routes. For journeys under a kilometer, lower income individuals will often walk whereas moderate income persons are apt to hop aboard a pedicab or motorcycle to save five minutes, less concerned about the cost of the trip. Surveys show that small–vehicle, taxi–like services, such as becaks and ojeks, are preferred for shopping and personal–business trips, like lifts to the local market or neighborhood clinic.[32] Route–based carriers, like mikrolets and minibuses, are used more for work and school trips. Customer satisfaction is generally high – a recent survey of ojek passengers in Bandung found 94 percent judged services in their neighborhood as "reasonably good".[33]

The recent survey of becak and ojek drivers in Jakarta revealed that most do not know their customers (Table 6.6). Suburban becak operators have the most steady clientele. Women, in particular, often patronize becak drivers out of loyalty and a sense of security. Many women prefer becaks over ojeks because they are easier to sit in, can more easily accommodate groceries, and have better safety records. Becaks are sometimes hired out for an entire day by a family under an arrangement called *langanan.* A driver might drop a parent off at the bus stop, pick up the mail, haul the car battery to a garage to have it charged, and pick up the children from school on the way back. The family receives a discount for loyal patronage along with reliable service.

A 1999 survey of becak customers from two neighborhoods in Surabaya revealed similarities to Jakarta's becak patronage. (Unlike Jakarta, becaks were never banished from Surabaya, Indonesia's second largest city, though they are barred from operating on major streets.) Compared to Surabaya's typical transit customer, becak users tend to be older housewives making short–to–medium haul trips between residential areas and shops.[34]

Indonesia's recent economic crisis has taken its toll on the informal transport industry. Table 6.6 suggests average patronage levels per driver have fallen off by some 40 percent. Ojek drivers average more customers

per day than their becak counterparts. The table also reveals that while most ojek operators provide helmets for their customers, few ask their customers to wear them. From field observations, patrons do not appear to need much cajoling to put on helmets.

The recent survey of operators also elicited information on busiest periods of service. Figure 6.3 shows that the time span most frequently mentioned by operators as being the busiest was from 8 to 10 in the morning. The second most frequently cited period was in the 6 to 8 p.m. evening peak. It is because these periods of heavy demand coincide with rush–hour road traffic that slow–moving informal services have come under sharp criticism.

Table 6.6. Operating Characteristics of Surveyed Becak and Ojek Operators, Jakarta, 1999

	Becak *(Pedicab)*		Ojek *(Motorcycle)*		All
	City	Suburbs	City	Suburbs	
Customer Base:					
Has regular customers	22.2%	50.0%	11.1%	33.3%	29.2%
No. of customers per day:					
Before economic crisis	6.2	6.5	6.0	8.6	5.3
During economic crisis	3.8	2.8	5.6	4.4	3.2
Customer Safety:					
Provide helmet to customer	–	–	61.1%	55.6%	57.9%
Usually ask customer to wear helmet	–	–	11.1%	16.7%	13.9%

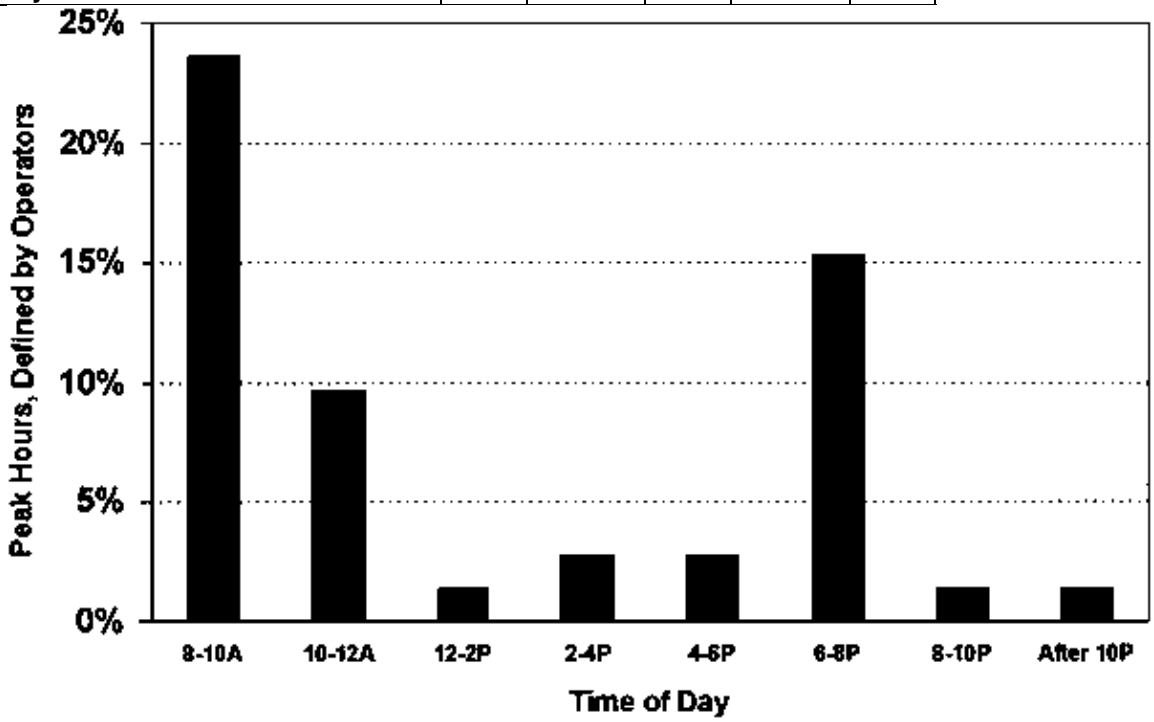

Figure 6.3. Hourly Distribution of the Busiest Times of Day for Becak and Ojek Services, Jakarta, 1999

6.4.2 Financial Performance: Costs and Earnings

Jakarta's informal transport operators earn very modest incomes and only manage to save small amounts of their take–home income. This is revealed by the 1999 survey. Table 6.7 shows that, on a monthly basis, drivers collected an average of US$77 in passenger revenues, with those operating out of city terminals bringing in the most. On average, operators incurred US$25 in work–related expenses each month, leaving an average net earnings of just over fifty dollars. Figure 6.4, constructed from itemized expenses provided by surveyed drivers, shows that for becak operators, daily expenses are typically split evenly between vehicle lease fees and other outlays (mainly for terminal fees and payments to neighborhood "bosses").[35] Ojek operators face the added costs of gasoline, which is cheap in Indonesia by international standards (courtesy of government subsidies). While net monthly earnings are fairly meager, a study of becak operators in Bandung, Indonesia's third largest city, revealed that on a revenue–to–cost basis, becaks perform better than

larger modes like bajajs, bemos, and micro–buses.[36] At the end of the month, however, becak drivers still have considerably less to show for their efforts than all other operators in terms of net earnings.

Table 6.7 reveals that those operating in urban settings fare better financially than those operating in the suburbs. Indeed, net average earnings are comparable for suburban operators, around US$31 per month, regardless if they drive a motorcycle or pedicab. This finding was underscored by a statistical model that predicted monthly net earnings, presented in this chapter's Technical Appendix. Controlling for factors like age, educational attainment, number of working hours per day, and years in the profession, the model found that in–city operations increased average net monthly earnings by $42. Operating an ojek instead of a becak increased net receipts by another US$58 per month. Becak drivers are only able to narrow the gap in their net earnings by putting in longer hours each day.

Statistics aside, the advantages of operating a becak in the city versus the suburbs was underscored in a recent interview of a Jakarta becak pedaler:

> "The business is better here than other places outside Jakarta," says Sail Bintakiran, 32, a poor farmer from West Java province who began pedaling a becak in Jakarta last October (1999). "It's just enough for my family." The father of two young children, Sail said he makes up to 70,000 rupiahs (about $9.60) a day as a becak driver in Jakarta – compared to only about 10,000 rupiahs (about $1.35) a day when he was driving a becak in the industrial suburban of Tangerang a few months back.[37]

The recent field survey also compiled information on daily living expenses for ojek and becak operators, itemized across ten expense categories.[38] After covering living expenses, Table 6.7 shows that, on average, drivers were able to set aside a nest egg of only US$16 each month, with suburban becak operators saving virtually nothing and urban ojek driver banking the most.

Table 6.7. Financial Performance of Becak and Ojek Services in Jakarta, Indonesia, 1999

	Becak *(Pedicab)*		**Ojek *(Motorcycle)***		**All**
	City	**Suburbs**	**City**	**Suburbs**	
Monthly Revenues, $	$ 71.80	$ 54.50	$ 126.24	$ 55.74	$ 77.06
Monthly Job Expenses, $	$ 5.88	$ 23.46	$ 45.83	$ 24.59	$ 24.93
Monthly Net Earnings, $	$ 65.92	$ 31.04	$ 80.41	$ 31.15	$ 52.13
Monthly Savings, $	$ 14.78	$ 0.97	$ 42.81	$ 6.63	$ 16.30

Note: All currencies are expressed in U.S. dollars based on October. 1999 exchange rates.

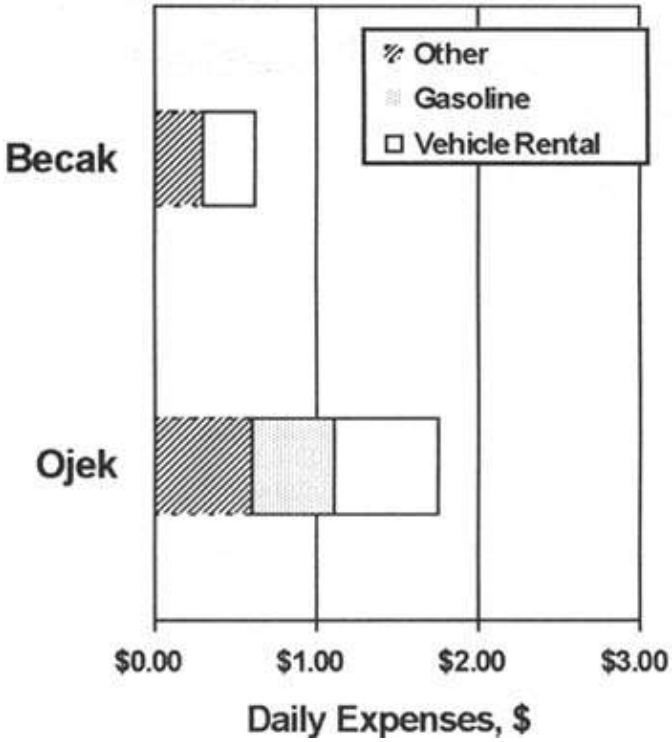

Figure 6.4. Daily Operating Expenses for Becak and Ojek Operations, by Expense Category, Jakarta, 1999

Note: Currencies are expressed in U.S. dollars based on October, 1999 exchange rates.

While statistics are limited, net earnings seems to increase proportional to vehicle size. Many bemo and micro–bus operators rely upon flexible routing and service practices to maximize fare intake. Interloping and route–cutting are quite common. Additionally, micro–bus operators often only depart from a terminal when passenger loads are high enough to make it financially worthwhile.

6.5 Organization and Management

While Jakarta's informal operators are not fully registered, a degree of coordination and public oversight occurs through the city's Office of Highway and Traffic Operations, called DLLAJR (Dinas Lalu Lintas Dan Angkutan Jalan Raya). One of the agency's chief responsibilities is the licensing of public transport carriers. The agency also operates 14 off–street terminals and maintains 900 bus shelters, tacitly allowing micro–buses and smaller vehicles to gather around these facilities. Of more importance to operators is the fact that this is the agency that periodically organizes confiscation raids on becaks and unlicensed three–wheelers. DLLAJR has also imposed restrictions on micro–buses, limiting them to outlying areas and feeder routes, and banning them from main thoroughfares and the city center entirely.

On the whole, Jakarta's informal transport services are guided more by informal arrangements and agreements between vehicle owners and operators than through government oversight and strictures. In most instances, becak, bajaj, and micro–bus drivers enter into agreements with vehicle owners, most of whom are members of cooperatives. These arrangements are often based on family relations or geography of origin, similar to what was found in a 1981 study of becak operations in Ujung Pandang.[36] Since ojek drivers are for the most part independent free–lancers, many have not formed associations. With time, however, more and more of Indonesia's ojek services are expanding into micro–enterprises of two to four people involved in operations, vehicle maintenance, and business management. Sometimes these micro–businesses are organized through residential security entities, known as BABINSA.

In general, Indonesia's transport cooperatives are less structured and active than their counterparts in Thailand and the Philippines, attending to only basic rules of operations. There are no rigid regulations. For instance, no written policies govern curb rights for becak or bajaj services, however out of custom, drivers congregate in particular spots around the city and follow queuing norms. Nor are there usually formal contracts in the hiring of drivers and crew for three–wheeler and micro–bus services. Instead, hiring is done on a more personal basis, sometimes organized along ethnic lines.

This chapter's Technical Appendix presents a statistical model that predicts the probability an ojek or becak operator belongs to a cooperative. The analysis reveals that older becak drivers who own their vehicles and operate in the core city are most likely to be members of cooperatives.

As in other parts of the developing world, informal transport services have spawned numerous sideline support businesses. Most micro–bus and minibus operators hire someone to both collect fares and tout customers. Many becak drivers pay *jagas* to watch their vehicles when they are away. And hundreds of street vendors in Jakarta make a living principally from selling cigarettes, sodas, and stir–fried dishes to congregations of ojek and becak drivers.

Despite the many hardships they face, many becak and ojek operators have good dispositions and seem to get along well with each other. The recent survey found high levels of comradery. Over three–quarters of operators (and nearly all becak drivers) personally knew the other drivers based out of their regular terminal. Over 90 percent of suburban becak and ojek drivers indicated they frequently socialized with other operators.

6.6 Policy Concerns

Over the years, Jakarta's informal transport sector has come under attack for everything from unruly driver behavior to jeopardizing the health and welfare of its operators. The very fact that many becak, helicak, and other informal services have been forcefully removed from the streets of Jakarta underscores the heightened policy concerns associated with the sector. This section reviews some of these core policy issues.

6.6.1 Congestion Impacts

Jakarta's informal sector has been attributed with both relieving and contributing to congestion in the city. As small, high occupancy vehicles, paratransit modes use considerably less of the road network than average passenger car equivalents. On a per passenger basis, bajajs consume about half, becaks a third, bemos one sixth, minibuses one seventh, and buses one thirteenth of the road space of cars (assuming an average auto occupancy of 1.5 persons). This low road–space consumption, combined with the rich variety of service offerings, reduces the demand for car ownership and optimizes the use of Jakarta's under–designed road network.[40] On the other hand, frequent stops and starts, illegal passenger loading and unloading, and erratic driving undermine the space–savings advantages of micro–buses and minibuses. The congestion impacts of these disruptive practices have been quantified. An increase of mikrolets from 10 percent to 25 percent of traffic, for example, has been associated with a reduction in traffic speeds along two–lane collector roads from 16.2 to 6.7 kilometers per hour.[41]

A root cause of aggressive and erratic driving behavior in Jakarta, as elsewhere, is over–competition. The driver survey revealed that location has a strong bearing on levels of competition. Those operating in the city consider levels of competition to be very high, especially ojek drivers (Table 6.8). Excessive competition appears to be far less of an issue in suburban markets.

While bans on becaks and three–wheeler scooters are officially based on the contention that they are hazardous and demeaning to operators, unofficially it is their congestion–inducing effects, and thus threat to economic growth, that have had most to do with the clamp downs. As a city seemingly obsessed with portraying itself as modern and efficient, becaks and bajajs are viewed as primitive carriers out of step with the times. However, it is Jakarta's authorities who seem out of step with the wishes of the populous. A recent survey of 1,000 Jakarta residents found that 86 percent felt they should allowed to continue operating on city streets.[42] Respondents liked becaks primarily because they are relatively cheap, they provide jobs for unemployed men, they allow goods to be hauled, they do not pollute, and they are less noisy than bajajs. Only 9 percent of all respondents felt becaks should be banned because they worsen traffic congestion.

Table 6.8. Perceived Levels of Competition among Ojek and Becak Drivers, by Location in Jakarta, 1999

Ojek–City	Becak–City	Ojek–Suburbs	Becak–Suburbs	All
Perceived Levels of competition:				
Not very competitive 0.0%	0.0%	83.3%	88.9%	43.0%
Moderately competitive 5.6%	61.1%	16.7%	11.1%	22.2%

	Highly competitive 94.6%	38.9%	0.0%	0.0%	34.8%

6.5.2 Mobility for the Poor

Even critics concede that Indonesia's informal carriers provide vital mobility services to low−income households. Bajajs, becaks and bemos are able to enter many unplanned, closely packed informal housing settlements, or kampungs. Becaks have long been favored by kampung dwellers because they are reliable, cheap, and provide curb−to−curb connections, enabling residents to haul loads of groceries and produce to their front doors.

In serving kampungs, becaks and other informal carriers promote their existence to some degree. Throughout greater Jakarta, kampungs are found along rail corridors, under high voltage cable lines, aside river banks, and near solid waste disposal sites, areas that are pretty much ignored by formal transit operators. The region's poor and rural in−migrants have been displaced to these marginal areas by escalating land prices and overcrowding in the inner city. The poorest kampungs dot the edges of the city, the very areas where many becaks migrated when banned from Jakarta's municipal limits. Consequently, today one finds far more becaks and motorized three−wheelers in outlying suburbs and semi−rural districts, like Cinere and Bekasi, than within the city itself.

Often fixed−route buses and minibuses stop near kampungs, but because kampung dwellers must cross heavy, uncontrolled traffic to reach them, they are practically inaccessible. In the case of one Jakarta kampung, Pademangan, one author wrote:

> Of transport facilities inside the kampung, there are only the becaks (which have now been made illegal). The nearest and western borders; the distance from the corners of the kampung to a bus stop is about one kilometer.[43]

6.6.3 Safety and Health

As in other large southeast Asian cities, Jakarta's informal carriers have come under fire as a threat to public safety and welfare. Paratransit modes are viewed as contributing to irregular and unsafe traffic flows not only because they are slower than regular traffic, but also because drivers often weave across traffic lanes, stop and start erratically to load and discharge customers, and flagrantly disobey traffic laws. Many micro−vehicles like bajas, bemos, and mikrolets are banged up and rusting, giving all the outward appearances of being unsafe and unreliable. They also receive low marks for being minimally maintained and uninsured. Additionally, because most drivers have modest educational backgrounds and little or no driver training, there is often a limited understanding of road rules and traffic laws. Long, grueling working hours reduce driver alertness and attentiveness toward the end of the working day.

In Jakarta, hopping aboard a motorcycle is riskier than taking a slower, less nimble becak. The 1999 survey of informal operators drivers revealed that none of the 36 becak operators had been in an accident the prior 24 months compared to 26 of the 36 ojek drivers. None of the ojek accidents were fatal, however several caused significant injuries to passengers. One of the ojek drivers had four accidents the prior two years and another, a 29−year old recent in−migrant from central Java, had five. Table 6.5, shown earlier, reveals accidents are more common among ojeks operating on the busy streets of the central city than in the suburbs. A statistical model, shown in this chapter's Technical Appendix, found that belonging to a cooperative significantly reduced accident rates. Controlling for mode and level of education, the model showed that the rate was lower by around a half an accident per two−year period for cooperative members versus non−members. This finding suggests cooperatives play a significant role in promoting safe driving behavior and tempering aggressiveness among members.

The health threats posed by pedaling a becak or operating a two− or three−wheeler have also been used as grounds for banning micro−vehicles from the streets of Jakarta. The 1999 field survey revealed that the worst ailments associated with hauling customers on bicycles and motorcycles were common pains and backaches (Figure 6.5). Joint−related problems, like rheumatism, were more common with becak operators. Statistical models, shown in the Technical Appendix of this chapter, revealed that incidences of persistent coughing, a possible symptom of upper respiratory problems, were no different among becak and ojek drivers. Older operators suffered the most from coughing problems. Also, chronic backache problems were found to be most common among drivers working in busy urban settings.

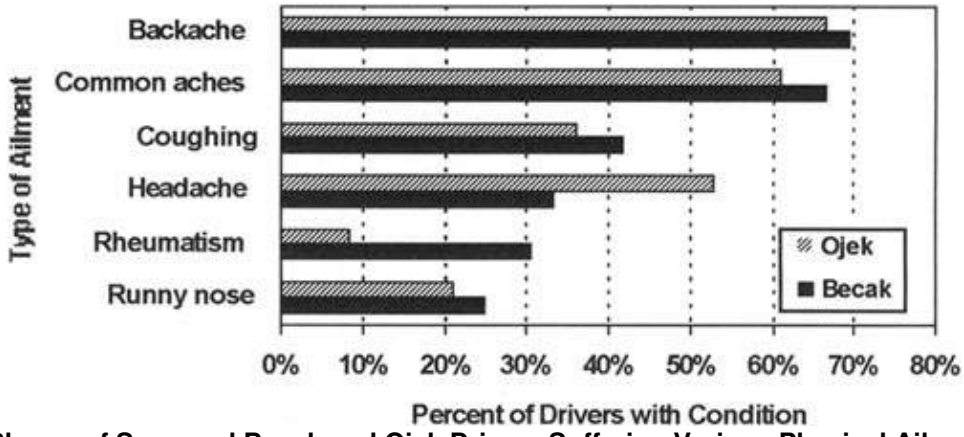

Figure 6.5. Shares of Surveyed Becak and Ojek Drivers Suffering Various Physical Ailments, Jakarta, 1999

6.6.4 Environment

Jakarta is today one of the world's most polluted cities, and the transportation sector is a major contributor to the problem. Mobile–source emissions consistently push ambient air pollution to well above acceptable levels. According to the World Health Organization, the region current exceeds international sulfur oxide stands of 40–60 µg/m^3 by more than 400 percent.

Jakarta is a classic example where the air and noise quality benefits versus the costs of informal transport services are ambiguous. While informal carriers receive high grades for their efficient use of road space and high occupancy levels, they get low mark for poor vehicle maintenance and the prevalence of two–stroked engine vehicles. What is known is that becaks, as non–motorized vehicles, emit absolutely no air pollutants. This has proven to be little *cause célébre,* for despite the pitched battle currently being waged to improve the region's air quality, becaks continue to be confiscated and, as of this writing, the ban on becaks continues in full force.

6.7 Case Summary and Conclusion

As in its southeast Asian counterparts, Bangkok and Manila, over the past several decades Jakarta has witnessed explosive growth, an uneven distribution of newly generated wealth, and a steady influx of rural, unskilled workers. To satisfy escalating demands for both travel and urban employment, a diverse and eclectic mix of small–vehicle, informal transport services has evolved. Included are pedal–powered becaks, ojek motorcycle taxis, three–wheel bajajs and bemos, mikrolet micro–buses, and an assortment of minibuses ranging from 20 to 30 seaters. Operationally, these modes complement formal bus services by providing feeder connections and serving neighborhoods that are impenetrable by large vehicles. They have been particularly important to the sustenance of informal housing settlements, known as kampungs, that are scattered throughout the metropolitan region. Becaks, bajajs, and bemos are the only dependable means of hauling goods and equipment in and out of some kampungs whose narrow passageways cannot even accommodate private cars. They are also the lone carriers in some fringe areas that have no formal public transport services. Out of necessity, Jakarta's informal transport and housing sectors are co–dependent.

Survey data presented in this chapter revealed just how vital the city's smallest carriers, becaks and ojeks, are in providing both mobility and gainful employment to disadvantaged men with families to support. Most becak drivers have minimal schooling, with only 30 percent having gone beyond elementary school. Most arrive from the countryside with no skills and pedal bikes for a living as a means of survival. To the degree that local officials insist upon tightening restrictions on becak and other small–vehicle services, it is incumbent that they assist drivers gain the skills necessary to work in other areas. While Jakarta's government has reinstated the ban on becaks for "humanitarian" reasons, unmentioned but no doubt true is the belief that becaks convey the image more of a sleepy Asian backwater than that of a modern, world–class metropolis.[44]

From survey data, hired–motorcycle operators earn far more each month than becak drivers. The ability to save has allowed most to gain full possession of their motorcycles. In contrast, few becak drivers own their vehicles, though low ownership rates are partly due to the understandable fear, based on past experiences, that their vehicles will be confiscated and disposed. Among tri–wheeler and micro–bus operators, most seek to maximize profits by minimizing costs (e.g., avoiding routine maintenance) and by aggressively seeking out

customers. Public officials view this as compromising traffic, safety, and comfort standards.

Over the next two decades, government plans call for a sharply reduced role for paratransit of all sizes by expanding alternative transportation facilities, including the provision of a new metro. One of the world's most diverse paratransit sectors could largely vanish as a consequence. Finding the right balance between private, unsubsidized paratransit and public, government–supported bus and rail services is crucial toward ensuring Jakarta's mobility future. Public policies governing paratransit services should be based on sound economic reasoning as opposed to political rhetoric. Equity considerations must also be carefully weighed. In addition to safeguarding the region's mobility future, the region's economic and environmental well being for decades to come could very well hang in the balance.

Notes

1. Bappeda DKI Jakarta, Jakarta: *City in Development,* Jakarta, Pernerintah Daerah Khusus Kota Jakarta, 1995.

2. Jabotabek is an acronym for Jakarta and its surrounding counties (kabupatans) of Bogor, Tangerang, and Bekasi.

3. Rail transit, made up of three main intraurban tracks and four interurban tracks, accounts for only 1.1 percent of public transit usage in the region. Source: B. Susantono, Transportation and Landuse Dynamics in Metropolitan Jakarta, *Berkeley Planning Journal,* Vol 12, 1997–98, pp. 126–144.

4. P. Barter, *An International Comparative Perspective on Urban Transport and Urban Form in Pacific Asia: The Challenge of Rapid Motorixation in Dense Cities,* Perth, Australia, Murdoch University, unpublished Ph.D. dissertation, 1999.

5. Barter, *op cit.,* 1999.

6. P. Tjiptoherijanto, Urbanisation and Urban Development in Indonesia, The Indonesian *Quarterly,* Vol. 24, No. 1, 1996, pp. 32–44.

7. W. Hook, Jakarta: A City in Crisis. *Sustainable Transport,* No. 8, 1998, p. 14.

8. T. Shimazaki and M. Rahman, Operational Characteristics of Paratransit in Developing Countries of Asia, *Transportation Research Record* 1503, 1995, pp. 49–56.

9. R. Cervero, Paratransit in Southeast Asia: A Market Response to Poor Roads? *Review of Urban and Regional Development Studies,* Vol. 3, 1991, pp. 3–27.

10. B. Soegijoko, Becaks as a Component of Urban Public Transportation in Indonesia, *Prisma: Indonesian Journal of Social and Economic Affairs,* Vol. 32, 1984, pp. 64– 77.

11. As traffic grew in the late 1960s and early 1970s, Jakarta's government sought to systematically reduce the number of becaks on the streets. In 1970, the municipal government issued a decree requiring licenses and in 1972 passed a law forbidding new production. Later, hours of operation were restricted to late night on main roads and territories of operations were limited mostly to poor communities. In 1988, Bylaw No. 11 was enacted which banned the operation of becaks altogether.

12. Staff Reporter, "President Abdurrahman Defends Ban on 'Becak'", *Jakarta* Post, November 21, 1999, p. 1.

13. Staff Report, "Sutiyoso Firm on 'Becak' Raids", *Jakarta Post,* November 22, 1999, p. 3.

14. H. Lugis, The Forgotten Role of Motorcycle in Urban Transport Market, Bandung, Indonesia, Institute of Technology, Bandung, Department of Civil Engineering, 2000, unpublished paper.

15. *Ibid.*

16. Barter, *op cit*., 1999; updated.

17. Jakarta's motorcyclists face some restrictions on where they can operate. They are banned from the fast lanes of Jakarta's major thoroughfares and from toll roads altogether.

18. Shimazaki and Rahman, *op cit.,* 1995.

19. H. Dick, Urban Public Transport: Jakarta, Surabaya, and Malang, *Bulletin of Indonesian Economic Studies,* Vol. 17, No. 1, 1988, pp. 12–34.

20. W. Pflug, In Jakarta, Public Transport Comes in Many Guises, *Bus Ride,* Vol. 28, No. 7, 1992, pp. 60–62.

21. In Indonesia, city's are divided into districts, called Kubupaten, with each district overseen by a government–appointed head, called the Bupati. The Bupati is responsible for overseeing most neighborhood–level urban services, including the bemo.

22. The Toyota Kijang is a sports–utility type of vehicle manufactured by the Indonesian division of Toyota Motor Company.

23. In contrast to paratransit servics, formal bus services in Indonesia are operated by a government owned and subsidized operator, PPD (Perusahaan Pengangkutan Djakarta), as well as a private franchiser, P.T. Mayasari Bhakti. Both operators received capital equipment from the Indonesian government. Bus routes are 10 to 20 kilometers, on average, and longer for express routes. Presently, PPD has a fleet of 1,700 buses and 14,500 employees including 3,600 drivers, 5,600 conductors, 2,300 mechanics, and 2,900 administrative staff. PDD covers 76 percent of operating expenses from farebox revenue. The private bus company, P.T. Mayasari Bhakti, runs services similar to PPD, averaging 10 minute headways. The company operates a higher proportion of express routes and higher quality air–conditioned services. It finances all its costs and receives no subsidies other than initial capital.

24. Pflug, op cit., 1992.

25. J. Black and A. Dardak, Road Based Public Transport in Jakarta: Commuter Mode Choice and User Preference, Paper presented at the Fourth International Conference of Urban Transportation in Developing Countries, CODATU IV, Jakarta, Indonesia, 1988.

26. Soegijoko, *op cit.,* 1984; S. Kartodirdjo, *The Pedicab in Yogjakarta,* Yogjakarta, Indonesia, Gadjah Mada University Press, 1981.

27. L. Jellinek, *The Wheel of Fortune: The History of a Poor Community in Jakarta,* Honolulu, University of Hawaii Press, 1991.

28. Lubis, *op cit.,* 2000.

29. These shares are higher than the 13 percent and 18 percent ownership rates among becak workers for surveys conducted earlier in Jakarta and Bandung, respectively. For these survey results, see: Shimazaki and Rahman, op cit., 1995.

30. Jellinek, *op, cit.,* 1991.

31. Shimazaki and Rahman, *op cit.,* 1995.

32. Soegijoki, op cit., 1984; Cervero, op cit., 1991.

33. Lubis, *op cit.,* 2000.

34. W. Hook, Darmaningtyas, and A. Hakim, Improving Conditions for Non– Motorized Transportation in Surabaya: A Case for Two Neighborhoods, paper presented at the International Conference on Transportation and Air Pollution, Jakarta, Indonesia, May, 2000.

35. Daily lease fees for a becak range from $0.20 to $0.30. Other expenses include the biennial renewal of one's becak driving license, which runs around $10, and periodic registration payments to local authorities, which costs around $2 every three months.

36. Soegijoki, *op cit.,* 1984.

37. G. Jones, Rickshaw Issue Pits Indonesia Against the Poor, San *Francisco Examiner,* March 10, 2000, p. B–9.

38. These categories consisted of the following: meals; housing; electricity; transportation; clothing; childrens' education; health; tobacco and alcohol purchases; daily items; and remittances sent to family members.

39. D. Forbes, Commodity Production and Underdevelopment: The Case of Pedalars and Trishaw Riders in Ujung Pandang, Indonesia, *Progress in Planning,* Vol. 16, No. 2, 1981, pp. 103–178.

40. Z. Arifin, A. Muchsin, and 1. Sorjo, Urban Transportation Problems in the Jakarta Metropolitan Area, *Indonesia: A Country Report for a Senior Course on Transport Technology,* Quezon City, University of the Philippines, National Center for Transportation Studies, 1988; Cervero, op cit., 1991.

41. M. Midridge, The Jakarta Traffic Management Study: Impact of High Paratransit Flows, *Traffic Engineering and Control,* Vol. 24, No. 9, 1983, pp. 441–448.

42. Internet source: http://becakwebsite.virtuallave.net/r19.htm.

43. L. Marcussen, *Third World Housing in Social and Spatial Development– The Case of Jakarta,* Aldershot, England, Avebury Press, 1990, p. 25.

44. In his November, 1999 speech at a rally of 5,000 becak supporters organized by the Urban Poor Consortium, President Abdurrahman Wahid declared: "Jakarta is the capital city. it is not supposed to have becak on its streets anymore".

Technical Appendix: Chapter Six

Predictive models were estimated from the Jakarta survey data to explore factors most strongly associated with several key outcome variables. This technical appendix presents the estimated models and briefly comments upon the outputs.

Mode of Operation

Table 6.1 A presents a best–fitting binomial logit model that predicts the probability a surveyed driver operated an ojek taxi–motorcycle versus a becak. Educational attainment was most strongly associated with a driver operating a motorized two–wheeler as opposed to a pedal–powered three–wheeler. Belonging to a cooperative also increased the odds. On the other hand, being older decreased the odds, reflecting the tendency of for–hire motorcycle and motor–scooter operators to be relatively young. The model tells us, for example, that there is a 95 percent chance that a respondent who is 30–years of age, graduated from high school, and belongs to a cooperative will drive an ojek instead of a becak. On the other hand, if the person is 40 years of age, has no formal education, and does not belong to any association, the probability is just 7 percent.

Table 6.1A. Binomial Logit Model for Predicting Probability Surveyed Driver Worked as an *Ojek* as opposed to a *Becak* Operator, Jakarta, 1999

	Coefficient	Standard Error	Probability
Highest Educational Attainment[1]	0.902	.316	.004
Age, years	–0.046	.028	.097
Belong to a Cooperative (1 = yes; 0 = no)	1.421	.841	.091
Constant	–1.701	1.438	.235
Summary Statistics:			
Chi–Square = 17.36, prob. = .000			
R^2 (Nagelkerke) = .629			
Cases correctly predicted = 72.2%			
No. of cases = 72			

[1] Ordinal measure of highest level of educational attainment: 1 = never attended school; 2 = elementary school, not graduated; 3 = elementary school, graduated; 4 = junior high school, graduated; 5 = high school, graduated; 6 = post–high–school 1–2 year diploma, graduated; 7 = college or academy, graduated; 8 = university, graduated.

Vehicle Ownership

Table 6.2A presents a logit model that predicts the probability that a surveyed respondent owned instead of rented his vehicle. The odds of vehicle ownership increased with educational attainment, motorcycle operations, and membership in a cooperative. This latter finding suggests cooperatives are instrumental in providing resources, including loan assistance, for vehicle ownership. The model does an 82 percent better job of predicting vehicle ownership among survey respondents than a simple flip of a coin (i.e., assuming a 50:50 odds ratio for each person, regardless of his characteristics or background).

Table 6.2A. Binomial Logit Model for Predicting Probability Survey Driver Owned as Opposed to Rented a Vehicle, Jakarta, 1999

	Coefficient	Standard Error	Probability
Highest Educational Attainment[1]	.917	.407	.024
Mode (1 = Ojek; 0 = Becak)	2.611	.678	.000
Belong to a Cooperative (1 = yes; 0 = no)	2.494	1.279	.051
Constant	–4.238	1.412	.003
Summary Statistics:			
Chi–Square = 40.33, prob. = .000			
R^2 (Nagelkerke) = .574			
Cases correctly predicted = 81.9%			
No. of cases = 72			

[1] Ordinal measure of highest level of educational attainment: 1 = never attended school; 2 = elementary school, not graduated; 3 = elementary school, graduated; 4 = junior high school, graduated; 5 = high school, graduated; 6 = post–high–school 1–2 year diploma, graduated; 7 = college or academy, graduated; 8 = university, graduated.

Net Monthly Earnings

Table 6.3A presents a best–fitting multiple regression model that explains monthly net earnings among surveyed drivers. Consistent with expectations, earnings are high among ojek drivers operating in the core city of Jakarta. Putting in more hours of work a day and more years in the profession are also associated with higher earnings, as are educational level and household size. The model explains 63 percent of the variation in monthly earnings and all predictor variables are significant at the 5 percent probability level.

Cooperative Membership

Table 6.4A shows an estimated a logit model that predicts the likelihood a survey respondent belonged to a cooperative. The model suggests cooperative membership is highest among older drivers who own their vehicles and who pedal becaks in the core city. Owning a vehicle is an inducement to cooperative relationships with other drivers, ostensibly because drivers have all the more vested interest in the success of informal transport services as a whole. Overall, the model does an 87.5 percent better job of predicting the odds that a driver belongs to a cooperative than a naive model based on an assumed even odds ratio.

Table 6.3A. Multiple Regression Model for Predicting *Monthly Net Earnings* for Surveyed Ojek and Becak Drivers in Jakarta, 1999; earnings expressed in us. dollars, where 1US$ = 7,500 Indonesian Rupiah

	Coefficient	Standard Error	Probability
Highest Educational Attainment[1]	7.990	2.885	.007
Age, years	.955	.359	.010
Location (1 = city; 0 = suburbs)	42.550	6.128	.000

Mode (1 = ojek; 0 = becak)	58.39	13.888	.000
No. persons in household	–6.878	2.335	.004
No. years working in profession	1.192	.561	.038
No. of working hours a day	1.947	.609	.002
Constant	–31.597	14.682	.035
Summary Statistics:			
F statistic = 15.49, prob. = .000			
R^2 = .629			
No. of cases = 72			

[1] Ordinal measure of highest level of educational attainment: 1 = never attended school; 2 = elementary school, not graduated; 3 = elementary school, graduated; 4 = junior high school, graduated: 5 = high school, graduated; 6 = post–high–school 1–2 year diploma, graduated; 7 = college or academy, graduated; 8 = university, graduated.

Table 6.4A. Binomial Logit Model for Predicting Probability Survey Driver Belongs to a Cooperative, Jakarta, 1999

	Coefficient	Standard Error	Probability
Age, years	.056	.039	.127
Location (1 = city; 0 = suburbs)	2.134	.884	.016
Mode (1 = ojek; 0 = becak)	–3.849	1.964	.050
Driver owns vehicle (1 = yes; 0 = no)	2.557	.046	.046
Constant	–9.342	2.739	.000
Summary Statistics:			
Chi–Square = 16.97, prob. = .002			
R^2 (Nagelkerke) = .365			
Cases correctly predicted = 87.5%			
No. of cases = 72			

Accidents

Table 6.5A shows accident rates among surveyed drivers were highest among better educated ojek operators. Most significant is the finding that cooperative membership was associated with lower rates. This suggests that cooperatives play an important role in tempering aggressive driving behavior among members. The model explains 43 percent of the variation in yearly accident rates among surveyed drivers.

Table 6.5A. Multiple Regression Model for Predicting *Number of Accidents in the* Past Year for Surveyed Ojek and Becak Drivers in Jakarta, 1999

	Coefficient	Standard Error	Probability
Highest Educational Attainment[1]	.444	.109	.000
Mode (1 = Ojek; 0 = Becak)	.864	.223	.000
Belong to a Cooperative (1 = yes; 0 = no)	–.399	.225	.111
Constant	–1.300	.356	.001
Summary Statistics:			
F Statistic = 17.32, prob. = .000			
R^2 = .433			
No. of cases = 72			

[1] Ordinal measure of highest level of educational attainment: 1 = never attended school; 2 = elementary school, not graduated; 3 = elementary school, graduated; 4 = junior high school, graduated; 5 = high school, graduated; 6 = post–high–school 1–2 year diploma, graduated; 7 = college or academy, graduated; 8 = university, graduated.

Driver Health

The field survey of Jakarta informal transport operators also collected information on drivers' health conditions. Table 6.6A presents a logit model that predicts the likelihood a driver has frequent respiratory problems, reflected by persistent coughing problems. The odds went up with both age and educational attainment. Mode of transport (e.g., ojek or becak) was not a significant predictor which suggests exposure factors predisposed operators to respiratory problems regardless if they peddled their vehicles or were propeled by engine power.

Table 6.7A shows chronic backache problems were strongly associated with in–city operations outside of the morning peak period. While the model only predicted 68 percent of all cases correctly, among those with recurring backache problems, the model had 90 percent predictive accuracy.

Table 6.6A. Binomial Logit Model for Predicting Probability Survey Driver Has Frequent and Persistent Coughing Problems, Jakarta, 1999

	Coefficient	Standard Error	Probability
Highest Educational Attainment[1]	1.025	.306	.001
Age, Years	0.078	.029	.008
Constant	–6.765	1.778	.000
Summary Statistics:			
Chi–Square = 17.93, prob. = .000			
R^2 (Nagelkerke) = .229			
Cases correctly predicted = 79.2%			

[1] Ordinal measure of highest level of educational attainment: 1 = never attended school; 2 = elementary school, not graduated; 3 = elementary school, graduated; 4 = junior high school, graduated; 5 = high school, graduated; 6 = post–high–school 1–2 year diploma, graduated; 7 = college or academy, graduated; 8 = university, graduated.

Table 6.7A. Binomial Logit Model for Predicting Probability Survey Driver Has Frequent and Persistent Backache Problems, Jakarta, 1999

	Coefficient	Standard Error	Probability
Location of Service (1 = city, 0 = suburbs)	1.872	.605	.002
Peak period of service (1 = 8–10 AM, 0 = other)	–1.323	.639	.039
Constant	0.267	.385	.487
Summary Statistics:			
Chi–Square = 17.28, prob. = .000			
R^2 (Nagelkerke) = .296			
Cases correctly predicted = 68.1%			

PART THREE: Other International Cases

Experiences with informal transport services in three other settings, all outside of Asia, are reviewed in Part Three. Chapter Seven tracks the evolution of private transport services in Kingston, Jamaica, a fascinating example of the pros and cons of various privatization regimes. There, everything from public monopolization, service franchising, and open competition has been tried with generally disappointing results. As a case, Kingston, Jamaica underscores how essential it is to build institutional and managerial capacities on both the private and public sides in mounting efficient and reliable mass transit services. Experiences with clandestine vans and motorcycle–taxis in South America's largest country, Brazil, are reviewed in Chapter Eight. In Rio de Janeiro and São Paulo, illegal vans and microbuses ply the same routes as franchised buses, providing superior services at higher prices. The internal organization of illicit van services is as sophisticated in Rio de Janeiro as anywhere. Rio's van cooperatives wield considerable political clout, a fact that has enabled them to grow and prosper. Brazil also offers examples of once–illicit paratransit being formalized and integrated into conventional bus networks. Chapter Nine provides a sub–Saharan African perspective on informal transport services where many of the world's poorest inhabitants depend on a range of modal options for everyday mobility needs. A dearth of bus services has spawn private services ranging from shared–ride taxis to

open–bed passenger trucks in countries like Nigeria and Kenya. With unbridled and over–zealous competition have come among the worst traffic snarls and most hazardous road conditions found anywhere. Transport cooperatives are found in most of urban Africa, however they exist to protect the interests of vehicle owners and operators, not the riding public. While sector–specific policies aimed at licensing and regulating operations are needed in many African settings, progress in alleviating poverty and improving overall macro–economic conditions will likely do more to upgrade urban transport services and safeguard public safety as anything.

Chapter Seven: Balancing Public versus Private Transport Services: Kingston, Jamaica

7.1 Transit and Growth in Kingston

Kingston, the western hemisphere's largest English–speaking city south of Miami, is Jamaica's economic engine, generating 48 percent of Gross Domestic Product (GDP). Yet many of the 850,000 inhabitants of the 250 square miles known as the Kingston Metropolitan Area (KMA) are poor. Over 20 percent KMA residents presently live below the poverty line. Most reside in what locals call "garrisons", a reference to their exclusion and fortification from the rest of the region.

As with many cities of the developing world, the growth of KMA has been mostly unplanned. Consequently, the city lacks adequate water supply, storm water drainage, and urban transportation, among other services. Today's transit services are undependable, disorderly, and fraught with mismanagement.

The transportation scene in Kingston was not always so bleak. The region has a long tradition of relying on private transit operators, and for much of its history, services were respectable. Prior to World War II until the early 1970s, private operators ran and monopolized KMA's transit sector, and generally made a profit by delivering decent services at a fair price. Steadily deteriorating services eventually lead to a government take–over in 1974, however with the transfer from a private to public monopoly, things only got worse.

Greater Kingston stands as a classic case of the inherent pitfalls of public monopolization on one extreme and pure privatization at the other extreme. The region has struggled over successive decades to find the right balance between private–sector participation and public oversight. As a case study, it tells us that pure laissez–faire transit in an environment of high unemployment and lax enforcement produces chaos on the streets and threatens public safety.

7.2 Transit Development in Kingston: A Historical Perspective

Greater Jamaica cannot be faulted for not trying various regulatory and operating regimes in hopes of putting safe, decent, and reliable mass transit services on the streets. However, the goals of transit have all too often been eclipsed by larger social policy objectives, leading to perverse outcomes. As a means of placating the poor by keeping the price of mobility fairly cheap, successive Jamaican governments have refused to allow fare increases. Predictably, franchise companies have balked at replacing aging equipment and curtailed services, allowing illegal operators to step in and eventually take over. What remains today is essentially an unregulated, seemingly free–for–all marketplace that suffers the classic spillover problems associated with over–competition, namely congestion and unsafe travel conditions.

7.2.1 Emergence of the Robots

Founded in 1953, the Jamaica Omnibus Service (JOS) was a private foreign–owned company that provided the first organized, centrally managed bus and streetcar services in the Kingston region.[1] While operating in the black during its first decade, by the late–1960s JOS suffered the fate of many private transit companies – the vicious spiral of declining ridership and farebox receipts prompting service cuts which further reduced ridership, spurring further cuts, and so on. The refusal of authorities – Public Passenger Transport Board (PPTB) – to allow fare increases resulted in rapid attrition of service quality and shortages of buses. When overcrowding and unreliable services reached near–crisis proportions in 1974, the central government took controlling interest of the company. This did little to stem the decline. Passengers per bus mile fell from 10.6 in 1974 to 7.7 in 1980. Fewer than one out of two buses were operatable.[2] Low worker productivity and morale

led to frequent labor disputes and service shut–downs.

Waiting in the wings to fill the gaps leftover by rapidly eroding JOS services were the illegal minibuses, or what Jamaicans call *robots.* Robots concentrated on peak–hour, high–demand corridors, leaving the higher–cost off–peak and marginal territories to the public operator.

Robots had actually been around prior to this time, first appearing after World War II when war returnees used private cars to provide shared ride services. They quickly became popular for their flexibility and speed. While they filled gaps left unserved by public streetcar and bus operators, they also gain a reputation as ruthless and unruly competitors. In a practice that continues today, robots interlope on licensed operators by running ahead to get to waiting passengers. Robots were temporarily removed from the streets when JOS was established in the 1950s, but as public bus services slipped during the 1970s, they began to steadily reappear.

The re–entry of robots produced a dual system of private, minibus services. Legal, owner–operated minibuses had been operating in Jamaica since the mid–1950s, organized through JOS's acquiescence as route associations and meant to complement and feed into JOS's public bus routes. Robots, on the other hand, are not and never have been formally organized, licensed to carry passengers, insured, or fitness certified. What resulted was head–to–head competition between the robots and both JOS and legitimate minibuses (Photo 7.1).

Photo 7.1. Kingston's Robots.

Unlicensed sedans line–up near a minibus terminal in hopes of poaching customers. A police officer, in front of the first car on the left, provides an enforcement presence.

Within the realm of formal transit services, minibuses quickly gained the upper hand over JOS bus services. Along radial, downtown routes, they tripled in number from 371 in 1977 to 1,112 in 1980. By 1982, minibuses accounted for 80 percent of total passengers, while the public bus company claimed just 19 percent.[3] Most minibus trips were aboard licensed services, however robots themselves captured 27 percent of all trips compared to JOS's 19 percent market share.

Part of JOS's demise was due to, in the words of one Jamaican official, "internal sabotage" – many bus drivers illegally operating their own cars along assigned routes in order to supplement income. That is, significant numbers of illegal robots were bus operators themselves.

7.2.2 Franchising Services

Realizing that robots were a major part of the local transit system, carrying over one–quarter of all trips, the Jamaican government decided it would be best to legitimize them and bring them under central regulatory control. With the help of foreign aid, the central government began to dissolve JOS and replace the organization with private franchises. Going from public to private ownership and operations, it was felt, would produce more efficient and market–responsive services. It was optimistically assumed that out of a highly dispersed, democratized, and competitive ownership structure, a service would emerge which combined high levels of profitability with non–discriminatory, comprehensive, and efficient transport to consumers.[4]

What emerged in 1983 was a bloated, multi−layered system involving many actors. Under the franchising scheme, routes were grouped into packages and each was auctioned off. Twenty−four tenders were received for ten sets of franchised route packages. Unexpectedly, most package holders turned out to be “absentee investors” who did not own or operate the vehicles. They were simply middlemen who leased their exclusive rights to individual owner−operators, most of whom were recently legalized robots. The lack of central control and oversight over operators doomed the effort from the beginning.

The ten package−holders paid an annual fee to the government for their exclusive franchise rights − in 1983, $113 Jamaican dollars (or at the time, about US$ 4) per passenger seat. Franchisers subsequently re−sold seats to minibus operators at a higher price. Franchisers had agreed to various terms but in practice rarely enforced them: adherence to route structures and timetables; use of coordinated color schemes and logos; sufficient liability insurance coverage; visible signage of the destination and seating capacity of each bus; stopping for customers only at designated bus stops; and the issuance of tickets for journeys. Also, franchisers agreed to monitor the operations of sub−franchisers and enforce rules of discipline, good public relations, personal appearance, and driving behavior. Because of poor management and oversight by the package−holders, and limited capital to expand services, many robots also started muscling in on high ridership routes. Excessive competition led to the rapid deterioration of services, not unlike what existed prior to franchising.

7.2.3 Controlled Areawide Franchises

In 1989, government abandoned the package−holder scheme and instead licensed bus operators month−by−month until a new system could be introduced. Because of loose enforcement, robots were more or less given the green light to poach customers alongside licensed bus and minibus operators.

In the early 1990s, a World Bank mission examined the situation, and recommended that the then highly fragmented system be coordinated and controlled through an area−wide franchise system that did not allow sub−franchising with individual operators. Following several years of local institution building, in 1996 the Kingston Metropolitan Area (KMA) entered into 10−year franchises for five territories with three different companies (despite the fact that none of the bidders met pre−qualification criteria in terms of financial and organizational capabilities). The franchise−holders were supposed to maintain central management and control over operations and were expressly prohibited for sub−franchising out services. They ignored these stipulations, however, and proceeded to sub−let services for a fee. The system became as fragmented as before, with individual operators vying for customers in a catch−as−catch−can kind of atmosphere.

Jamaica’s foray into more tightly controlled franchising seemed doomed from the outset. Franchise−holders never had the equity or capital to mount sufficient services. They were unable to acquire the buses and vans from the 800−plus independent operators who had long been running services in their territories. Many openly allowed robots to operate in their franchise areas to make up for the shortage of services that they were suppose to provide. The Jamaican government had purchased new buses that were leased to franchise−holders in hopes of spurring service expansions. Most franchise−holders failed to pay their leases and the government, realizing commuters would suffer if they confiscated buses, had its hands tied. Franchise−holders were allowed to continue operating buses in arrears.

Overall, KMA’s efforts at franchising faltered because of limited management and institutional capacities within both the public and private sectors. They were also hurt by the politicalization of public transport policy − namely, maintenance of low fares as a policy tool to help the poor. In this sense, public transport has over many decades functioned as a stepchild to larger political agendas which, over time, have dragged down the entire sector.

7.2.4 Instituting a Public Monopoly

Current plans call for setting up a public transit agency, the Jamaica Urban Transit Company, or JUTC, that will provide organized services on fixed routes with fixed timetables.[5] Once services are established, JUTC will eventually be privatized, though planning and policy−making will remain a public responsibility. Thus after nearly two decades of experimenting with essentially competitive and privatized public transport services, the Kingston policy−makers have concluded that a single monopoly is in their best long−term interest.

The conversion to a single service−provider has already begun with the transfer of one of the five franchise districts, the eastern one, to JUTC.[6] When JUTC initiated fixed−route bus services in the eastern district, the agency had over 100 private operators, many of whom were robots who freely operated under the previous regime, to contend with. Through stepped−up enforcement, these operators were promptly pushed out, and

most became robots elsewhere. It took the strong presence of the local police and national army along major corridors in the eastern district to keep the interlopers out. To date, experience has been largely positive. Over 100 new Volvo and Mercedes–Benz air–conditioned buses have been purchased courtesy of international loans. Ridership has gone up. As enforcement has waned in recent months, however, illegal operators have resurfaced along some routes. In late 1999, JUTC estimated that it was losing 30 percent of potential revenues to robots. However, because JUTC services are good and fares are reasonable, the number of robots is no where near what it was before.

Successful large–bus public services will depend upon predictable and dependable service at a fair price, which so far JUTC has delivered. Additionally, JUTC has allowed selective private operations along main routes in the eastern district as a way to differentiate and supplement services. “Executive taxis”, which provide premium services (e.g., air conditioning, comfortable seats, and occasionally coffee and orange juice) at a premium fare ($60 Jamaican versus $10 Jamaican for regular buses), have been allowed. They serve the willing–and–able–to–pay customers and so far are oversubscribed during rush hours. Executive taxis, licensed as passenger stage carriers, have adopted a color scheme and logo to distinguish themselves from other services. To JUTC’s credit, the organization recognized the need to maintain services that compete more with the private car than with public buses. That is, as a hybrid between an exclusive–ride taxi and a shared–ride minibus, executive taxis retain some of the positive features of former paratransit services. JUTC’s acceptance of limited competition has also helped assuage critics who fear public monopolization will lead to inefficient and uniform–quality services.

Perhaps the most promising sign that big changes are under way is that tariff–setting has been de–politicized. Notably, the responsibility for setting fares has been shifted from Jamaica’s legislative cabinet to a newly formed central administration, the Office of Regulation Utilities. JUTC also hopes that new policies will be adopted that redistribute illegal robots to rural areas, allowing them to operate as shared–ride taxis in places without steady bus services.

7.3 Public Transport Today

In the four other districts that remain under private franchise, a diversity of private bus and paratransit services, some legal and most illegal, continue to ply their trades. Legal operators must be registered with the Jamaican Transport Authority (JTA), and are distinguished by a red licensed plate with PP letters. All registered services must carry minimum liability coverage, which is presently $200,000 Jamaican per passenger, up to $1,000,000 Jamaican per accident incident.

Table 7.1 lists the five existing classes of stage services that are licensed and sanctioned by the JTA. An estimated 90 percent of vehicles have either no or an incomplete license. Some sub–franchise with franchise holders, though most operate independently. Many unlicensed operators are simply men driving their personal automobiles around, seeking to provide door–to–door lifts for as many passengers as possible for a negotiated fare.

Table 7.1. Classes of Common–Carrier Paratransit Services Licensed by the Jamaican Transport Authority

Hackney taxis: Vehicles with less than 8 seats that operate as exclusive–ride taxis, taking a single–paying party from one specific location to another specific location. They cannot stop within 100 feet of bus stops.

Stage taxis: 11 to 40 seat carriers that can carry a single fare–paying passenger load and that can pick–up and stop anywhere.

Route taxis: Minibuses and station wagons that can carry up to 9 passengers in rural and fringe parts of urban areas, operating like to shared–ride taxis.

Executive, or express, taxis: 20–29 seat services with guaranteed seating for all customers, limited–stop connectivity, and high levels of comfort, in return for higher fares.

Contract carriers: Private, for–hire services that can contract to carry one or more people from a single location to another location for a set fare.

While Jamaican law bans most licensed operators from picking up congregating passengers at terminals and curbside stops, all operators, whether legal or not, do (Photo 7.2).[7] Interloping is also commonplace,

undermining the ability to set timetables or provide orderly services. Fierce, unbridled competition has produced problems of routine delays, overcrowding, unpredictability, and poor vehicle maintenance.

Photo 7.2. Illegal Stopping.

A shared–ride taxi illegally tries to coax passengers at a bus stop into his vehicle. Taxis are barred from stopping anywhere within 100 feet of a bus stop.

Accounts of overzealous competition in Kingston's informal transport sector seem almost comical were it not for the seriousness of the matter:

> "There exists a veritable jungle in (Kingston's) urban mass transport sector. In this jungle, drivers and conductors hustle to make a target income to satisfy absentee bus–owners – competing with other buses to collect passengers unceremoniously ejecting passengers where route completion seems unprofitable."[8]

> "Operators often do not complete their routes; if they were going east, but noted that there were many people waiting for a bus across the road, they would empty the bus, turn around, pick up the new group of passengers, and go the other way. They also began to charge what they wanted to charge, despite government–regulated fares".[9]

7.4 Market Supply and Competition

This section reviews Jamaica's transit and paratransit sector from the supply side. The background characteristics and business practices of workers are first reviewed. On most buses and some micro–buses, drivers are joined by conductors who mainly collect fares, and on the most competitive and potentially profitable routes, by touts whose job it is to reel in and poach customers. This review of the labor market is followed by discussions of vehicle mixes and services features.

7.4.1 Operators and Labor

The popular perception of the informal sector as simply a refuge for unskilled rural–migrants to find secure employment holds in part for the Kingston region, though this is a simplification. High unemployment among young men in the Kingston area, often over 50 percent, creates a ready supply of robot operators. However many arrive with a wide range of skills, some of which get put to use in various capacities – drivers, touts, fare–handlers, mechanics, field attendants – within Kingston's informal transport sector.

Operator Characteristics

The best insights into the backgrounds of Kingston's urban transport operators comes from a 1985 survey of 293 drivers and field workers.[10] Most respondents were sub–franchisers under the then–just–liberalized privatization of public transport services.

One–half of the workers surveyed had migrated to Kingston from the countryside, drawn to the city by employment prospects. This was similar to a national sample of urban workers at the same time which found 47 percent came from rural areas. The average age of drivers was 28 years and for conductors it was 26. Education levels among all personnel were comparatively high by Jamaican standards. Just 3.2 percent had no education, 61.3 percent had completed primary school, and 35.5 percent had completed post–primary school.[11] The fact that drivers are generally young and well–educated suggests that training programs could have high pay–off. Because the interaction between passengers and conductors or drivers is a source of major friction, conflicts could potentially be lessened through training workers in customer service relations.

While the exact shares are uncertain, it appears that a significant majority of Kingston's private bus and minibus operators own their own vehicles. According to the survey, half of vehicle–owners had previously worked for someone else as a driver. Once they become vehicle–owners, many become employers, hiring help to collect fares and deal with non–driving chores, and occasionally hiring touts.

Operating buses, micro–buses, and sedans is largely a full–time business for most workers – the 1985 survey found that 93 percent of drivers did nothing but drive for a living. A quarter of drivers and around 14 percent of conductors said they underwent testing before being given a job. Recruitment occurred informally – 37 percent of drivers and 45 percent of conductors said they secured their job through a friend or relative. More than a third of drivers felt they could earn a living as a craftsman or mechanic any time they wish.

Driving a private bus or minibus in Kingston appears to be a fairly mobile line of work.

About half of surveyed drivers had worked with their employer for less than 6 months, and the majority for less than 3 months. Still, 46 percent had been engaged in this line of work for over 5 years. In this sense, employment duration is bifurcated – many work very short periods of time, tire of the work and leave, however among those who stay on board, they generally become career drivers. This indicates some degree of upward mobility among those who stick with the business.

Kingston's informal transport sector has been receptive to new labor market entrants as well as those dislocated from other jobs. The survey showed that 9 percent of drivers and 20 percent of conductors were unemployed 3 years earlier. In her examination of labor mobility within Kingston's informal minibus sector, Patricia Andersen remarked: "there is the movement of young workers in and out of the industry as they either become burnt out by the hustle or are thrown out by dissatisfied bus–owners; there is the circular movement within the industry as drivers and conductors move from one bus to another; and there is the limited upward mobility of those who are able to save enough to obtain their own minibus or to leave the industry."[12]

Working and Earnings Environment

The 1985 survey revealed that urban transport workers toil long hours on the streets of Kingston – 65 percent worked between 13 and 16 hours a day. The majority worked six days a week. This averaged to 83 hours of work per week, more than twice the 40 hours a week worked by those in Jamaica's formal institutions as stipulated by law.

While urban transport workers earned more than the typical low–skilled Jamaican worker, this was only because they worked inordinately long hours. With an average weekly salary of 266 Jamaican dollars (or about US$ 53 at the 1985 exchange rate), and average work–week of 83 hours, they made only a bit above 3 Jamaican dollars (or about US$ 0.65) an hour. This was comparable to what low–salaried workers in the formal economy made.

Drivers averaged the highest earnings, with 56 percent making between 200 and 300 Jamaican dollars (or around US$ 40 to US$ 60) per week. Most conductors netted around half this amount. Working proprietors (i.e., those who both owned and operated vehicles) made the most – 22 percent made 700 to 1,000 Jamaican dollars per week and 22 percent made 1,000 to 1,200 per week (or US$ 140 to US$ 200 and US$ 200 to US$ 240, respectively).

Life of a linesman, or tout, is the roughest and least secure of all informal transport workers. A tout's job is to lure in customers by boasting about the benefits of his bus–quicker travel with music, hospitality, and so forth. While a good tout can be important to financial success along a highly competitive route, he is not usually paid by vehicle–owners but rather is tipped by the driver. The work is fairly fluid, with many moving from one area to another on a regular basis. Most touts only get paid if the intake is good, thus earnings are unstable.

Compensation packages varied among Kingston's surveyed transport workers. Among those working for a boss, 54 percent received a fixed weekly income, while the earnings of 45 percent were pegged to the intake of the bus. Overtime pay was more the exception than the rule – 61 percent said they received none, reflecting the absence of any prior agreement between drivers and employers about the length of the working day. More common was lunch allowances, received by 84 percent of operators, though lunch monies were usually taken from the earnings of the bus meaning both workers and employers shared in the expense. The 1985 survey also found that only 26 percent of workers received paid sick leave and just 24 percent got paid vacations. Compared to the national workforce, minibus drivers received relatively few benefits – three percent had health insurance, and just one percent had pension programs (all being individuals who worked for larger firms). The most common benefits were accident insurance (provided for 69 percent of workers) and personal loans from employers (provided to 52 percent).

Vehicle Ownership Patterns

Kingston's urban transport sector features two classes of vehicle ownership and working relationships: (1) self–employed owners who operate minibuses and (2) non–working proprietors who have other jobs and, as a side business, purchase larger buses and hire one or two persons to operate them.

In 1985, 97 percent of minibus drivers owned their vehicles. Most were one–bus businessmen – just 10 percent owned two buses, and only 2 percent owned three or more. In the cases of larger buses, however, fewer than one out of five operators at the wheel owned the vehicles they were driving. In–service problems of interloping and overly aggressive driving appear to be greatest among the services of absentee owners, who are shielded from the realities of day–to–day operations and management.

For minibus services, the gateway to eventual vehicle ownership is primarily through setting aside a portion of daily earnings. The survey found that 44 percent of vehicle–owners acquired capital for their minibus purchase through personal savings, with family assistance and bank loans providing the source of funds for much of the balance.

Worker Attitudes

Kingston's urban transport workers assessed their jobs quite unfavorably, attested by high turnover rate. Some workers hoped to one–day become minibus owner–entrepreneurs, however most wanted to cut ties with the industry altogether.

Workers often asserted that they were in the industry so that their children can do better. The main reasons behind worker dissatisfaction were poor passenger relations and fear of personal danger. Most conceded that the highly competitive nature of their work increased the risk of violent conflict with other operators. The ideal personality for a minibus worker would seem to be someone who enjoys social interaction and high–adrenalin work. Despite problems, workers acknowledged that without minibus work they would likely be unemployed, forced to hussle on the streets. Accordingly, the main reason cited for staying with job was that it paid more than they could receive doing other work.

7.4.2 Service and Operating Features

The 1985 survey also provided insights into how former robots arranged their services once they were brought into the fold as legal operators under the then–just–initiated liberalization policy. Many mini–bus operators opted to ply the same routes that they operated before as illegal robots. Moreover, many licensed bus operators abandoned their assigned routes during slack periods and pirated other routes that were busier, effectively once again becoming robots. Route–shifting occurred also at night when some drivers sought to supplement day–earnings by serving surrounding rural areas.

The 1985 survey found that a full 90 percent of Kingston's urban drivers never followed timetables. Instead, they followed their own instincts, waiting 10 to 15 minutes after the bus or minibus before them had left the terminal before departing. Stamina also appeared to play a role in service practices. Remarked one driver: "If you go out at 6:00 a.m. and you work till 6:00 p.m., and your body gets tired, you just stop work".[13]

Today, the equipment of choice among most urban transport operators is a minibus that seats 12 to 24 customers (Photo 7.3). Since drivers run their minibuses, vans, and sedans hard to lure in customers, equipment deteriorates rapidly. In short time, vehicles fall into disrepair. In–service breakdowns are quite frequent.

The fastest growing mode of urban transport in Kingston is indisputably the four–door sedan. Over the past decade, there has been an explosion in the number of private motorists operating as unlicensed, uninsured share–ride taxis. This has been fueled in part by the proliferation of used Japanese cars, allowed by the Jamaican government's relaxation of import duties for second–hand vehicles from Japan.

7.4.3 The Role of Robots: The Good, Bad, and Ugly

Robots are not universally despised. They seem to play both a complementary and competitive role. Interviews with licensed minibus operators revealed that robots take up the slack at nights and on Sundays, and along risky sections of highways that are notorious for robberies. The picture portrayed of the typical robot driver is a tough guy who keeps a machete under his seat, and is willing to fight off would–be robbers or pay "dues" for safe passage. In addition to risk–taking, robots also serve less profitable routes which have been deserted by licensed operators. However, licensed operators are quick to also note that robots are guilty of unfair competition, poaching on the most lucrative routes and running ahead of them to grab customers. Legal operators resent the fact that robots pay no fees for licenses, insurance, and sub–franchises. They have been known to organize attacks against robots, slashing tires, breaking windows, and threatening bodily harm against robot operators should transgressions continue.

Photo 7.3. Minibuses Queue at Half Way Tree Terminus.

A sedan illegally parks at the minibus queue while a police patrol looks on.

From field interviews, it is apparent that what legal operators want most is a reduction in competition by eliminating pirates and robots. Because of over–competition, many lamented that they can not earn enough to set aside income for licensing, insurance, and repair, forcing them to become essentially illegal operators themselves (in the sense they fail to meet regulatory requirements). However, legal operators are also a source of the over–competition problem by adding buses to their assigned routes at will, regardless of what their sub–franchise agreements stipulate.

7.5 Market Demand and Performance

Customers of Kingston's transport services are drawn mainly from the ranks of captive riders – namely, those without access to a private automobile. Most well–off residents and the professional class own cars and regularly use them. Everyone else takes mass transit, whether licensed or not.

The problems endemic in a loosely regulated urban transport market are revealed by the gulf between what consumers want and what service–providers deliver. While as noted virtually no drivers followed tables, in contrast the 1985 survey of customers showed they highly valued knowing when to expect a bus to arrive, as shown in Fig. 7.1.

Figure 7.1 also shows that route incompletion was a fairly common practice – 74 percent of riders questioned had experienced this problem. Also, 93 percent felt the issuance of a ticket was important, mainly for purposes of collecting on liability insurance in the event of an accident and obtaining a refund if the bus breaks down. In practice, however, tickets are seldom issued. Seventy percent of passengers said they had never received one. Other passenger complaints included the unwillingness of operators to carry school

children and the elderly at discounted fares. The one illegal practice that customers had no complaints about was the tendency to stop at undesignated stops. About a third of customers said operators dropped them off anywhere they requested.

Rider responses suggest a reasonable balance of supply and demand, at least from their perspective – 55 percent felt waiting time was adequate. Still, on some outlying routes, well over half of riders felt there were not enough buses or minibuses. Also, 59 percent of passengers interviewed preferred big buses over minibuses. Among the 9 percent who preferred minibuses, they liked smaller vehicles because they were faster in traffic.

Only one in four patrons who were interviewed rated services as satisfactory or excellent; others gave them a fair or poor rating. A quarter rated the behavior of drivers as poor, mainly due to reckless driving, while 64 percent felt conductors behaved poorly, mainly because of their discourteous treatment of customers and use of foul language.

7.6 Institutional Arrangements

As reviewed earlier, KMA has tried an array of institutional arrangements in organizing and rationalizing public transport services, consistently with unfavorable results. It has gone from pure open competition in the pre–World War II era, to centralized public control in the 1950s and 1960s, to a competitive franchise arrangement in the 1990s. Open markets led to classic problems of over–aggressive competition, cream–skimming, interloping, price–gouging, and reckless driving.

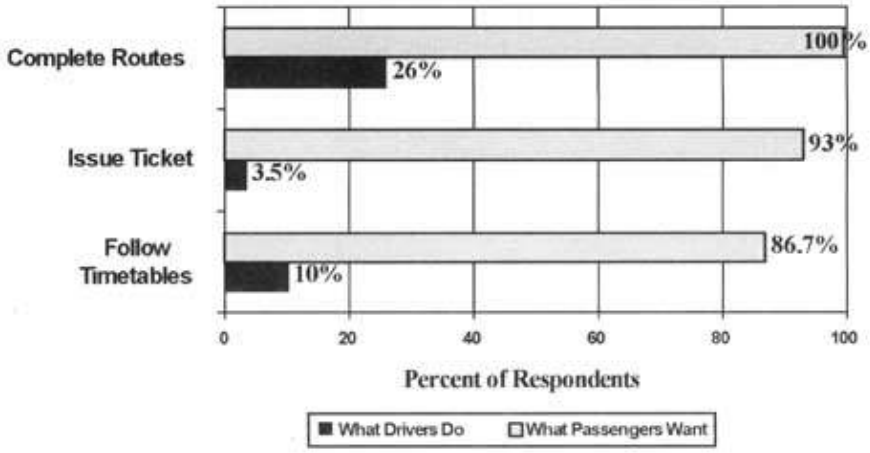

Figure 7.1. Difference Between Driver Behavior and Passenger Preferences, 1985.

Adapted from: P. Anderson, *Minibus Ride: A Journey Through the Informal Sector of Kingston's Mass Transportation System,* Kingston, Institute of Social and Economic Research, University of the West Indies, 1987.

7.6.1 The Franchising Debacle

Jamaica's foray into franchising failed in part because of lax oversight and management, which resulted in sub–franchising to independent owner–operators. It also failed because of the Jamaican government's unwillingness to allow fare increases. As noted earlier, urban transport has long been viewed in Jamaica as an instrument of social policy – notably, the provision of cheap mobility for the poor. While consulting studies called for fare schedules to increase by between 100 percent and 400 percent during the 1980s and early 1990s, the Jamaican government steadfastly refused any increases.

The results of poorly designed franchise arrangements and near–sighted policy–making were predictable. Being cash–short, franchisers opted to allow others to run their services, functioning more or less as middle–men between government and operators. Absent any enforcement or political will to change matters, operators reverted back to their old practices – charging what they wished, head–running to steal passengers, operating when and where they chose, and stopping anywhere they wished. Unlicensed and uninsured vehicles of all kinds – buses, minibuses, vans, station wagons, and sedans – operated as they always had. Thus, franchising brought no real changes.

7.6.2 Internal Organization

Under both franchising schemes and more open−competition regimes, Kingston's urban transport service−providers have always sought to rationalize services through cooperatives, though often with little success. Compared to other parts of the world, and in particular Asia and Latin America, cooperatives remain fairly weak and ineffective in the Kingston metropolitan area.

Under franchising, franchise−holders have long sought to bring operators together in hopes of setting timetables and striking some agreement against head−running. Franchise−holders complain that absentee owners never attend association meetings, hampering their efforts to promote higher quality services. However, interviews with even working−proprietors revealed few saw benefits from becoming a member of a franchise or cooperative. Many considered the relationship as exploitative, with the franchise owners simply interested in collecting membership fees. (In 1985, the sub−franchise fee was 160 to 250 Jamaican dollar per seat per annum; membership fees and dues added another 400 to 1000 in yearly expenses.)

Besides the cost of joining a franchise or cooperative, few informal operators have any financial incentive to cooperate and abide by scheduled service timetables. Operators share earnings with others, including absentee owners in the case of most private bus services. The unremitting drive to maximize take−home pay prompts most operators to run vehicles as often as they can, regardless what timetables say.

As in other parts of the world, a somewhat convoluted chain of actors are involved in Kingston's informal transport business. Illegal operators not only have to pay−off franchise−holders and licensed operators for the right to operate in their "turf", but often must also line the pockets of local police officers. Frequently, formal and informal operators alike must pay for "protection" to enter garrisons (greater Kingston's many high−crime, low−income neighborhoods).

7.7 Regulations and Public Policies

This section reviews issues, past and present, related to regulation, enforcement, capital purchases, and worker training in greater Kingston urban transport sector.

7.7.1 Regulations

Regulations have long been on the books requiring registration and governing the operating and pricing practices of private bus, minibus, and taxi operators in greater Kingston. To become registered, operators must meet minimum insurance requirements and receive certificates of fitness.[14] In addition, stage (shared−ride) carriers that seat up to 40 passengers and can load and drop−off customers anywhere are required to file and publish timetables and fare schedules (set at $5 base fare plus $0.80 per kilometer, in 1999 in Jamaican dollars). Route taxis (i.e., minibuses and sedans that carry up to 9 passengers, restricted mainly to fringe and rural areas) must clearly mark their trip origins and destinations and publish "proper" fare schedules.

Current regulations also require that all for−hire minibus workers (i.e., stage carrier and route taxi operators) wear uniforms and badges, issue tickets, and refrain from playing music. While the ban on music is generally observed, and many (though not all) drivers wear uniforms, requirements that potentially affected personal income − i.e., issuing tickets and keeping on schedule − are universally ignored.

7.7.2 Monitoring and Enforcement

Historically, monitoring of transport operators and enforcement of rules and requirements has been uneven or non−existent. Few government resources go into monitoring. And few franchise−holders have employed route inspectors. At most, a franchise−holder will pay senior drivers a little extra to report incidences and infractions.

Many minibus drivers feel police are only interested in shaking them down for protection money. To reduce the incursion of the police on their activities, some robots have taken to the use of Citizens Band (CB) radios and cellular phones to report the presence of police and suggest alternative routes.

With the establishment of JUTC as what policy−makers hope will become a single centralized transit operator, many believe that aggressive and effective monitoring and enforcement will be crucial to the agency's long−term survival. This responsibility rests on the shoulders of the Jamaican Transport Authority. The

authority maintains it will be able to retain order and civility among contracted private operators under the era of JUTC, notwithstanding the many problems experienced in the past. Currently, over 70 field inspectors monitor operations along regional transit routes (Photo 7.4). There is apparently a stronger political will than in the past to see JUTC succeed. Besides enforcement, the provision of frequent and reliable public bus services is seen as critical in eliminating robot services.

Policy−makers at the highest level of Jamaican government seem adamant that in order to establish an efficient and orderly system, all robots and unlicensed operators must be removed from the streets. They play to channel sufficient resources into monitoring and enforcement to make sure this happens. The hope is that robots will be displaced to the areas beyond the Kingston Metropolitan Area's boundaries. In private, however, many concede that this goes against the grain of Jamaican culture – the desire to improve their quality of living by being in the nation's primate city.

Photo 7.4. Field inspectors monitor minibus activities at terminals.

Short−wave radios are used to communicate among inspectors.

From field interviews, most minibus and private−vehicle operators feel that government will never be able to eliminate robots from the streets of Jamaica. One robot operator noted: "A lot of us need to pay off our 50−percent interest car loans". Most stated something to the effect that "poor folks need mobility and jobs, and robot services will also be needed to fill this role". Many independent−operators are also skeptical that JUTA will survive in the long run because the Jamaican government will never have the resources to underwrite operating deficits.

7.7.3 Capital Equipment

The Jamaican government has also over the years sought to rationalize and upgrade urban transport by infusing the sector with new capital equipment, as scarce foreign exchange surplus allows. In the late 1980s, 221 new buses were bought and distributed to franchise package−holders under credit arrangements. While this alleviated overcrowding on buses, it also spawned fierce competition for customers. High interest rates and extra fees levied by the package−holders meant operators of new buses were under increased pressure to bring in revenues. Incidences of dangerous driving and road accidents increased.

As existing services are transferred to JUTC, the upgrading rolling stock is a high priority. Over 100 new buses were recently purchased for JUTC's operation within the Eastern district. As the other four franchise areas are transferred over to JUTC, completing the centralization of urban transit, new buses are to be purchased in parallel. Maintenance and terminal facilities are also being improved.

7.7.4 Training

In the late 1980s, the Jamaican Transport Authority initiated training for some 2,700 bus and minibus drivers. Workers reported that training courses were valuable in helping them cope with conflict situations with passengers. The program also stressed decorum and professional appearance.

JUTC has also stressed training at all levels – among drivers, supervisors, maintenance staff, managers, and administrators. Some observers fear, however, that in the pressure to cover operating deficits, training will be one of the first items cut.

7.8 Case Summary and Conclusion

The informal transport sector has long been an integral part of greater Kingston's transportation scene, with both positive and negative consequences. On the positive side, it has provided cheap mobility for the urban poor without draining the public largesse. On the negative side, in an environment of ruthless competition, it has produced undependable, erratic, and unsafe services.

The history of Kingston's informal services is fascinating, and provides a compelling case for strong government oversight in a privatized, ultra–competitive transportation marketplace. Kingston's informal transport sector blossomed in the 1970s as the illegitimate sibling of the then–struggling official public transport operator, the Jamaica Omnibus Service. The sector consisted mainly of minibuses that formed a collection of privately owned and often unregistered vehicles, operating as pirates on official routes. They later became officially sanctioned but continued to operate as a highly decentralized and competitive system.

Jamaica's attempts to franchise out services as a reaction to the proliferation of robots yielded few dividends. The initial package–holder scheme that granted exclusive operating franchises in ten districts led to sub–franchising. Franchise–holders were never properly capitalized, thus independents were needed to fill the vacuum. However, franchise–holders had no control over those operating within their franchise districts. This led to over–competition, which in an environment of high unemployment led to chaos in the streets.

Current plans call for eliminating all franchises and consolidating services under the helm of a centrally controlled and managed public transport agency. In effect, after many failed attempts to rationalize privatize services, the region is now seeking to set up a public monopoly, not unlike what existed a half century ago. The ultimate aim, however, is to retain all service and fare planning and policy–making functions at the central level, and to competitively tender individual bus routes. Standard coaches are to replace minibuses. If this new approach is to succeed, however, the central government will have to refrain from meddling into Kingston's transit business. Unless fare schedules are officially sanctioned at levels sufficient to allow for profits, contract–operators will be unable to secure loans to purchase equipment and unwilling to make long–term capital commitments. And unless sufficient resources are devoted to policing and enforcing new regulations, free–lancers will continue to illegally ply their trades.

It is interesting that at a time when much of the world is trying to promote entrepreneurism and competition within their urban transport sector, greater Kingston is moving in the opposite direction, toward a centrally controlled system. Policy–makers contend they have experimented with the other approach for some three decades and believe it is unworkable. Most also believe that the long–term success of public takeover rests on entirely eliminating robot services.

The problems formed by Jamaica's hyper–competitive urban transport sector have in some ways been systemic, tied to a deeper set of forces that continue to plague this island–nation. As long as Jamaica remains poor and unemployment stays high, over–zealous competition among informal transport operators will be hard to curb. Programs that step up enforcement, improve driver training, and provide access to credit, while well intentioned and no doubt beneficial at the margins, deal more with the symptoms than the root problems. Jamaica is a country where improving macro–economic conditions and spurring economic growth will likely be necessary before significant headway can be made in legitimizing the informal sector, be it in transportation, water supply, or other urban services.

Notes

1. For a review of public transport history in KMA, see: R. Swaby, Some Problems of Public Utility by Statutory Board in Jamaica: The Jamaica Omnibus Services Case, Social *and Economics Studies,* Vol. 23, No. 2, 1974.

2. P. Anderson, *Minibus Ride: A Journey Through the Sector of Kingston's Mass Transport System,* Kingston, Institute of Social and Economic Research, University of the West Indies, 1987.

3. Jamaica Ministry of Mining and Energy. *Transportation Energy End Use Study.* Kingston: Ministry of Mining and Energy, 1982.

4. Anderson, *op cit.,* 1987.

5. This was prompted in part by a US$ 16 million urban loan package provided by the World Bank that stipulated a system of long–term franchises be competitive awarded that expressly prohibited sub–franchising.

6. JUTC bought out the 10–year franchise from the franchise–holder of the eastern district.

7. The World Bank, *Performance Evaluation Report: Jamaica, Kingston Urban Transport Project,* Washington, D.C., The World Bank, Operations Evaluation Department, Report No. 17599,1998.

8. Anderson, op *cit.,* 1987, p. 6.

9. A. Fletcher. Lessons of a Failed Project in Jamaica. *Lessons from Urban Transport: Selected Proceedings from a World Bank Seminar.* Washington, D.C.: The World Bank, Operations Evaluation Department, 1998, p. 56.

10. Anderson, *op cit,* 1987.

11. About half of all minibus workers, regardless of position, have post–primary education – a higher share than for the total labor force. Working proprietors have highest educational level – 48 percent have completed post–primary education.

12. Anderson, *op cit.,* 1987, p. 4.

13. Anderson, op *cit.,* 1987, p. 43.

14. In 1999, annual registration were as follows in Jamaican dollars: Hackney taxis – $2500; Stage taxis – $1,500 plus $750 per seat; Route taxis – $4000; Public franchise carriers – $2500; and Contract carriers – $5000.

Chapter Eight: Brazil's Burgeoning Informal Transport Sector

8.1 Clandestine Transport in Brazil

The rapid ascent of medium–capacity vans and micro–vehicles today threatens the formal, regulated transport systems of many Brazilian cities, and has spawned heated political debates over whether to intervene or acquiesce. A wide variety of policies are being proposed to come to grips with Brazil's burgeoning informal transport sector.

Informal transport goes by many names in Brazil, including *clandestino, pirata, fantasma, perueiros,* and *kombistas,* with certain monikers favored in some cities more than others. Since "clandestine" transport is the term used most widely in Latin America to describe illegal paratransit, this term is adopted in this chapter.

Brazilian experiences are also notable in that while informal transport services are widespread in some cities, they are largely absent in others. Six large capital cities with a significant presence of clandestine transport are São Paulo, Rio de Janeiro, Recife, Fortaleza, Salvador, and Brasilia. Big capital cities where informal carriers are largely absent include Belo Horizonte, Porto Alegre, Goiânia, Curitiba, Florianópolis, Belém, and Porto Velho. As noted later, some of these *"clandestino*–free*"* cities have managed to successfully integrate former informal operators into their formal transport networks.

The composition of collective−ride transportation in large Brazilian cities has changed radically in the past few years. Most notable has been the rapid growth in unregulated shared−ride van services, not unlike those in metropolitan Bangkok, reviewed in Chapter Four. A 1996 survey estimated there to be over 18,000 informal carriers nationwide, with 58 percent being vans and kombis, and the rest made up of full−size buses (19 percent), motorcycle−taxis (16 percent), and illegal shared−ride taxis (7 percent).[1] While many illegal carriers serve poor neighborhoods, for the most part their clientele are not from the lowest rung of Brazil's income strata, and indeed many are drawn from middle−income classes: surveys reveal 94 percent make more than twice the minimum daily salary of 6 Reais ($3.50), 55 percent make more than six times this minimum, and nearly 5 percent are from households with cars available.[2]

Clandestine vans, kombis, buses, pick−ups, and motorcycle−taxis make up appreciable shares on daily ridership in many Brazilian cities. They are especially prevalent in the northeast, where in some smaller and medium−sized cities they handle over half of all transit trips. Their mobility roles in bigger cities, including in the northeast, are modest, though growing. In 1996, informal carriers of all shapes and sizes handled an estimated 11 percent of all trips in Salvador and 18 percent in Fortaleza (Photo 8.1).[3]

This section reviews experiences with the two fastest growing informal sectors − vans/kombis and motorcycle−taxis. Issues related to service design, patronage, and competition are highlighted.

8.2.1 Vans and Kombis

Brazil's homespun version of minibuses and microbuses are vans and kombis, respectively. Illegal vans busted onto Brazil's urban transportation scene in the mid−1990s, initially comprised of older Volkswagen minibuses, soon to be replaced by newer Japanese and Korean vans, depending on the city.[4] Vans typically seat 14 to 16 passengers, with a configuration of three rows of four seats at the rear and two front−seat passengers next to the driver (Photo 8.2). Kombis are smaller (usually Volkswagen) minivans, seating 8 to 10 passengers. New vans typically cost two and half times more than new kombis. By international standards, Brazil's clandestine vans and kombis are fairly new, on average 3 to 4 years of age.

Brazil's clandestine vans operate like class−two jitneys, plying fixed routes and picking up and dropping off passengers at any point along the way. Most routes overlap formal bus lines, providing a competing, parallel service. Customers enjoy service−price options as a consequence. Some routes branch into neighborhoods unserved (or very poorly served) by formal bus operators, and a few function mainly as feeders into bus and train terminals. Similar to buses, vans charge flat fares (often higher than buses) and do not allow free transfers.

Because vans compete directly with suburban rail and franchised bus services, they have seriously cut into ridership on many formal bus lines. Predictably, they have become a source of consternation and widespread political controversy. Between 1995 and 1999, ridership on formal bus and metropolitan rail transit plummeted by 30 percent in Brazil's two largest cities, São Paulo and Rio de Janeiro.[5] At stake is the financial future of a bus transit industry that is privatized throughout Brazil and that unilaterally makes profits − often very handsome profits.[6]

The Marketplace

Brazil's van/kombi industry provides insightful glimpses into the natural workings of a mostly unconstrained marketplace. On the supply side, one finds mainly "lean" one−man businesses. Drivers are many times the vans' owners and maintainers, in an artisan style arrangement. Some rent vehicles and in the largest cities, many hire Touts, as in Kingston (as reviewed in the previous chapter). A 1997 survey of clandestine vans (called *peruas)* in São Paulo revealed they are overwhelmingly men (98.8 percent), married with kids (with a mean number of dependents of 2.2), have completed secondary school (38 percent), and formerly worked as a driver for a company (38 percent).[7] As noted later, these traits closely match the profiles of Rio's clandestine van operators.

Photo 8.1. Informal Pick–up Services, Salvador, Brazil.

In poorer parts of the country, pick–ups and virtually any form of motorized transport are pressed into service as collective–ride carriers.

Photo 8.2. Brazil's Clandestine Vans.

Jam–packed van is hailed by a customer from the street. Like a jitney, vans normally stop and unload customers anywhere, although in larger Brazilian cities, most vans operate as semi–express (limited–stop) services. As illustrated in this photo, a windshield placard indicates the vehicles destination. The absence of a red–color license plate signifies the carrier is unlicensed.

Surveys of vans users in two cities in the northeast of Brazil reveal it is travel times savings that have won over many customers. In Salvador, the main reasons cited by users for choosing vans over formal buses were speed advantages (75 percent), more frequent headways (19.8 percent), higher levels of comfort (3.3 percent), and greater security (1.8 percent).[8] A separate survey in Recife found similar reasons people opted for vans and kombis: faster speeds (74 percent), greater comfort (19 percent), more frequent services (14 percent), less–frequent stopping (9 percent), and closer delivery to one's residence (6 percent).[9]

São Paulo, South America's largest mega–city of some 18–million inhabitants, has more clandestine vans than anywhere, currently estimated to be around 16,000 vehicles operating within a sprawling 8,000 square–kilometer area.[10] Called *peruas,* São Paulo's informal vans represent a mid–category of mass transti services, lying somewhere in between the comfort and speed zone of public buses and private cars. Survey's show the city's peruas serve mainly young adults (half of riders are between 18 and 30 years of age), 70 percent who rides vans regularly, mostly to go to work or school (82 percent of trip purposes).[11] A recent municipal act that makes unregistered vans illegal and calls for a crack–down on their operations has sparked mass protests and riots, including staged torchings of piles of rubber tires along various avenues on the periphery of the city. Rio de Janeiro's administration has been more lenient, so far allowing illegal vans to openly operate in direct violation of laws. This is partly because of the political pressures brought to bear by

Rio's highly organized and increasingly powerful van industry. Rio's van sector is also making remarkable headway into the ridership of franchised bus operators. For these reasons, Rio's clandestine vans are a case–study focus of this chapter.

It should be noted that not all vans in Brazilian cities operate illegally, with at least thirty municipalities having legalized van services over the past decade. In fact, Brazil represents one of the best examples anywhere of once illicit vans being legitimized and successfully integrated with formal bus services. In the southern Brazilian city of Porto Alegre, unregistered vans and shared–ride taxis began competing with public buses in 1974, winning over patrons in droves.[12] At the time, informal operators focused on upper–class residential areas, providing premium services for premium fares. With time, they began expanding into lower–income areas as well. Seeing the hand–writing on the wall, Porto Alegre's public bus operators agreed to a streamlining of services in return for commercial vans obtaining licenses and operating according to strictures and service standards. In turn, van operators agreed to restructure services so that they mainly complement rather than compete with fixed–route buses. Today, more than 400 vans operate along 41 routes under 260 private operating licenses, carrying about 100,000 passengers per day, or around 10 percent of Porto Alegre's transit ridership. Vans charge nearly twice as much as public buses, depending on distances travel, but in return customers get faster, safer, more reliable, and more comfortable rides.

Factors Fueling the Popularity of Vans

The National Transit Union, a think tank and industrial policy group, completed a comprehensive review of Brazil's informal transport situation in 1997. A focus of the work was factors that have contributed to modal shifts from buses to informal vans and kombis. The study attributed the growth in informal transport services to a mix of demand and supply side forces. Most important was the deterioration in quality of formal transit services, notably discomfort (i.e., predominantly standing during peak hours), a worsening safety record (i.e., on–board robberies and theft), and long and increasing wait and travel times. This latter factor is partly attributable to ever–worsening traffic congestion, a product of rapid motorization. (Brazil has one of the world's fast–growing rates of car ownership, courtesy of the nation's 1994 currency stabilization and dramatic lowering of import tariffs on goods like automobiles.) In the second half of the 1990s, car ownership rates in Rio de Janeiro jumped 9 percent annually.[13] In Brazil's ten largest cities, transit riders lose an estimated 250 million hours annually because of traffic tie–ups.[14] In São Paulo, congestion has increased bus operating costs by an estimated 16 percent.

Declining quality of formal transit services is also rooted in the privileged and powerful positions many franchised bus companies enjoy. Most operate under very long–term franchises, meaning there is little contestability over services and accordingly little market discipline. This gets expressed as poor management of services, including little effort to coordinate timetables and a lack of intermodal connectivity. Add to this lax enforcement of regulations, and it is easy to see why many Brazilian cities are natural breeding grounds for informal vans.

As in much of the developing world, high urban unemployment has also spawned many unskilled Brazilians to enter into the van business.[15] Rapid suburbanization, and the increases in cross–town journeys that it brings, has likewise helped set the stage for a new breed of collective–ride transit services. Predictably, franchise bus companies have been slow to recognize and respond to the changing geography of trip–making. The influences of rapid suburbanization and changing travel patterns on travel demand are underscored by experiences in Jaboatão dos Guararpes, a city in Pernambuco province in northeast Brazil that is part of the Recife metropolitan area. There, the explosion in numbers of clandestine vans and 8–passenger kombis cut into bus ridership so much that franchisers were forced to reduce their fleet sizes by 70 percent.[16] Today, around 80 percent of travel demand, representing some 80,000 motorized daily trips, has been taken over by the informal sector, which is currently 2,400–vehicles strong and growing. This turn of events is due in good part to the quick–footedness of van and kombi operators to respond to and capably serve rising demands for tangential, suburb–to–suburb trips at a time franchise bus operators plod along with their traditional radial services. This is revealed by a comparison of the spatial distribution of daily trip productions among informal carriers versus formal buses (Map 8.1). Due to their smaller vehicles sizes, kombis and vans provide flexibility, speed, and door–to–door delivery advantages that are well tuned to the diffuse nature of suburban travel. At one suburban pick–up point in Jaboatão dos Guararpes, vans were observed to come by every 10 seconds.

It is because clandestine vans, through the invisible hands of the marketplace, have responded to the many shortcomings of traditional bus services that they have gained in popularity. Vans offer a guaranteed seat, smoother riders, usually shorter waiting and travel times, and greater perceived safety.

The siphoning off of tens of thousands of customers each day from formal bus routes threatens to cripple many franchise bus companies. The experiences in Jaboatão dos Guararpes are the extreme, however in a number of other settings vans are thought to have won over half the transit market in the past three years.[17] In Rio de Janeiro, the shift to vans has been heavy along some radial corridors; vans are estimated to carry anywhere between 5 and 15 percent of all motorized trips in the region. In São Paulo, one estimate places the market share as high as 25 percent.[18] In the late 1990s, São Paulo's population of clandestine vans and kombis were tripling annually.

8.2.2 Motorcycle–Taxis

While vans are the predominant form of informal transport in Brazilian cities, and certainly the modes that have captured the greatest political and press attention, also present are motorcycle–taxis, similar to those found in Thailand and Indonesia. The predominant bike used is the 125–CC Honda.

Motor–cycle taxis are found mainly in small and medium–size Brazilian cities, particularly in the northeast of the country, in and around Fortaleza, São Luis, and Teresina. In larger, generally more affluent cities like São Paulo and Rio de Janeiro, motorcycle–taxis are consigned mainly to lower–income neighborhoods, in particular informal housing settlements, called *favelas,* on the outskirts. A 1998 survey of 19 of Brazil's largest cities estimated there to be 5,760 illegal motorcycle–taxis, with 2,000 or so concentrated in the provincial capital of Fortaleza. Some of Fortaleza's motorcycle–taxis have been legalized in recent years, though legitimate two–wheel taxis comprise a fraction of the total (Photo 8.3).[19]

Map 8.1. Daily Intracity Trip Production on Public Buses and Vans/Kombis, Jaboatão dos Guararpes.

Trip productions aboard public buses are spatially concentrated among traffic zones (left map) where trip productions for clandestine vans and kombis are more geographically Spread out. (*Adapted from:* Logit Mercosul, *Plano Diretor de Transporte Público de Passageiros do Jaboatão dos Guararapes,* Porto Alegre, Brazil, Logit Mercosul).

Brazil's motorcycle–taxi operators have formed loosely–knit cooperatives mainly for purposes of providing strength in numbers. Motorcycle theft is such a serious problem throughout Brazil – it is not even possible to insure a motorcycle because theft is so common – that cooperatives function in good part as surveillance units, providing multiple "eyes" for safekeeping sake. Because little is known or published on Brazil's motor–cycle taxi sector, this chapter focuses mainly on clandestine vans. What is indisputable is that, as throughout Asia, motorcycle–taxis are booming in numbers and will continue to gain market shares of short–distance journeys in coming years.

Photo 8.3. Two–wheel taxis congregate near a bus terminal in Brazil's "motorcycle–taxi capital", Fortaleza.

(Photo credit: J. Oliveira, Jr.)

8.3 Regulation and Privatization

Informal transport thrives in Brazil in spite of a highly regulated formal transport sector. Regulations exist for fares, routes, schedules, labor rules, curbside operations, and vehicle specifications. For intra–urban services, regulations are enacted and enforced by municipal governments whereas inter–urban services are the purview of state governments. It is the lack of resources devoted to monitoring and enforcement – coupled with a lack of political will to crack down – that has allowed informal carriers to carry on their business unobstructed in many instances.

Brazil has been an international leader in privatizing its formal public transport sector. In nearly all Brazilian cities, bus and rail services are delivered by private firms licensed by regulating bodies. Firms are usually awarded long–term contracts, sometimes for as long as 30 years. Accordingly, many operate as self–regulated cartels with low levels of contestability from other potential operators. Unlike privatized transit throughout much of the world, most of Brazil's franchised operators are highly profitable, capitalized, and modernized. Barriers to entry are high and include legal, technical, and operational (e.g., minimum fleet size) requirements. This operational environment has bred a popular sentiment that is generally opposed to large bus companies, most of which are viewed as monopolistic and overly powerful.[20] It is precisely for this reason that informal vans have their defenders, not only among illegal operators but among many academics, politicians, think tanks, and common citizens.

8.4 Clandestine Transport in Rio de Janeiro

Rio de Janeiro – a city of nearly 6 million inhabitants occupying an area of 1200 km^2 – has witnessed an explosion of minibus and van services over the past half decade. As in much of Brazil, the surge in vans is largely rooted in declining quality of bus services. Rio's franchised buses are often overcrowded in peak hours and too infrequent in the off–peak. Many of the city's suburbs and exurbs receive no direct bus services.[21]

Rio's first incursion of informal transport was unlicensed buses, which numbered some 600 vehicles in the early 1990s, making up 10 percent of the metropolitan area's bus fleet.[22] Today, one still finds an occasional clandestine bus on the streets of Rio, in addition to Volkswagen kombis, which tend to operate short–distance routes and penetrate narrow or steep roads that are inaccessible by bus. Accordingly, kombis more complement than compete with bus services. It is the 14–to–16 passenger minibus van that has cornered Rio's informal transport marketplace in recent years. And because they directly compete with franchised buses, their presence has caused a political commotion.

8.4.1 Rio's Van Services

Some of Rio's vans are legal and regulated by the city, however most are illegal and unregulated. Sanctioned vans serve activity centers like schools, large employers, and shopping complexes, and provide charter and tourist services as well. Unsanctioned vans mainly duplicate and compete directly with formal franchise bus services.

Some clandestine vans operate within the municipality, however the vast majority ply radial routes between downtown terminals and poor suburban neighborhoods. A few intra–city routes serve fairly wealthy neighborhoods south of the city, called Zona Sol; indeed, it is not uncommon to see vans plying avenues along the tourist beaches of Copacabana, Ipanema, and Barra de Tijuca. The densest network of routes ties the center–city to the low–income suburbs north of the city, called the Baixada Fluminese, a district of nine municipalities and 2.7 million inhabitants.[23] Also found within the favelas of the Baixada Fluminense are 8–seater Kombis, which operate mainly as circulators.

Rio's vans are generally fairly new – on average, 3 years old, comparable to the age of conventional buses. Most are Japanese and Korean made, and were directly purchased by owner–drivers courtesy of 4–year commercial loans.[24] A recent survey of vans operating in the central city found that slightly over two–thirds are owner–operated.[25] Most (44 percent) downtown van operators are between 26 and 35 years of age. Around half have completed secondary schooling. Also, 57 percent are married and two–thirds have one to three dependents.

Rio's vans serve mainly non–discretionary trips. Their bread–and–butter market is the journey–to–work. Typically in the morning, vans circulate within a neighborhood of the Baixada, picking up customers in a hail–and–ride fashion. Once the van is full (usually within 5–10 minutes of service initiation), the vehicle transforms into a line–haul carrier. It enters a main arterial and proceeds, often for a good 40 to 50 kilometers, to a small off–street terminal used by a collective of van operators. Most van terminals are near formal bus terminals on the edge of downtown Rio. Some routes penetrate deeper into downtown Rio for an extra fee. It generally takes plus or minus an hour to cover the median route distance of 60 kilometers from the suburbs to downtown Rio. In the afternoon and evening, the process operates in reverse. During the inter–peak period there is a slow–down in services. On weekends and during the midday, operators usually wait until 8 passengers have gathered to depart to or from terminals. This takes, on average, around 20 to 25 minutes. Rio's clandestine vans are omnipresent, occupying city streets 24–hours a day, seven days a week (though for most routes services are available twenty or so hours a day, which tend to be longer durations than formal bus services).

Estimates of daily ridership aboard Rio's clandestine vans and kombis range from 310,000 to as high as a half million, or 5 to 15 percent of mass transit trips. While the actual figure is thought to be toward the lower end of the range, there are corridors in Rio's Baixada Fluminense district where field counts reveal vans capture some 40 percent of motorized trips.[27] Such numbers are all the more remarkable given that clandestine vans have only been around for five years, first having come on the scene in late–1995.

8.4.2 Service–Price Differentiation

As noted above, Rio's clandestine vans compete with rather than complement formal buses. Most operate along the same routes as buses, often (and illegally) picking up and dropping off customers at stops designated buses. Interloping is quite common, with vans speeding up to reach stops before buses and poaching customers waiting at bus terminals (Photos 8.4 and 8.5). Such transgressions have no doubt hurt bus operators. Heightened competition dramatically cut into transit ridership over the 1995 to 1998 period: within the city, bus and metro patronage fell 4 percent and 16 percent, respectively; and within the 5,610 km^2 Rio metropolitan region, patronage on the 740–km suburban rail network plummeted by 61 percent.[28] Nevertheless, vans do fill an important market niche, appealing to those seeking comfort and faster services and accordingly willing to pay a higher fare. Increasingly, customers are being drawn from the ranks of those who have an option of driving to work. Saving time is what prompts the middle–class to give up their cars in favor of collective–ride transport. A 1998 survey found Rio's vans typically provided a 40 to 50 percent travel time savings relative to parallel bus runs.[29]

Photo 8.4a. Poaching and Interloping in Rio.

Photo 8.4b. Poaching and Interloping in Rio.

Photo 8.4c. Poaching and Interloping in Rio.

In Rio's Ihla do Governador district, near the international airport, vans flagrantly violate traffic laws, queuing and picking up customers at bus stops. The tendency of vans to jump in front of buses in hopes of reaching a stop first is illustrated in the lower photo.

Photo 8.5 Hovering Around a Bus Depot in Downtown Rio.

This van creeps along side of Rio's main downtown bus terminal in hopes of nabbing a waiting customer.

In a city with rapid increases in car ownership and usage, the wider service–price spectrum for collective–ride services benefits consumers and the broader traveling public. And by off–loading some of the high marginal–cost peak–period demand (i.e., peak load–shedding), Rio's vans likely provide unrecognized financial benefits to many bus companies. As in much of the developing world, an important policy challenge lies in ensuring the rich mix of service–price options is retained while at the same time seeing to it that operators of all stripes and colors compete fairly.

8.4.3 Market Make–Up and Preferences

Several surveys provide a glimpse into the composition of ridership on Rio's clandestine vans. The typical customer is a middle–age female with a secondary–school education making a low–paying work trip. A 1997 survey of 253 customers revealed that nine out of ten took vans to get to jobs, with three–quarters taking vans all five days a week.[30] Most commutes are long, 40–kilometers or more to and from the central city. Two out of three van customers previously took public buses to get to work.

According to the 1997 survey, the main reasons customers switched to vans were travel–time savings and higher comfort levels. Most customers mentioned they had to wait around 10 minutes for a van, comparable to waiting times for buses. The major door–to–door travel–time savings occurred while en route, reflecting the speed advantages of smaller, more maneuverable vehicles. Interviews with a number of customers, carried out during field work for the Rio case study, revealed other important factors to be vans' longer periods of operations, higher perceived safety levels, and a guaranteed seat for what is often hour–plus journeys in hot, muggy weather.

The 1997 survey indicated van customers paid three to four times as much as bus fares for time–savings and other amenities, depending on the distance traveled. This is considerably higher, however, than what was revealed from a 1998 survey of 37 van routes serving the Baixada Fluminense district, where vans generally cost 10 to 15 percent more, and in no case 30 percent more than conventional buses.[31] The results of this more recent survey are considered to be more accurate.

The importance of travel time savings to van users was confirmed by original data analyses conducted on 18 routes that operate between downtown Rio and the Baixada Fluminense district. Data were compiled by graduate students in transportation engineering at the Federal University of Rio de Janeiro (Universidade Federal do Rio de Janeiro) in early 1999. Using this data base, a log–log regression equation was estimated that predicted daily ridership on the 18 van routes as a function of four explanatory variables: (1) ratio of per trip fares on vans versus bus; (2) van kilometers of service per day; (3) ratio of vehicle kilometers of service per day provided by vans versus formal buses; and (4) ratio of average per trip travel time by bus versus van.

Thus, a basic demand equation was constructed which predicted van ridership as a function of relative price, relative intensity of service, and relative travel–time savings of vans versus bus, controlling for scale (vehicle kilometers per day). The resulting elasticity for relative travel–time savings was quite high – 1.17 (in absolute terms), or more than four times as high as the estimated fare elasticity and more than 16 times as high as the estimated service–intensity elasticity.[32] These results make it abundantly clear that the success of Rio's clandestine vans lies in their superior travel–time performance.

8.4.4 Organization

The internal organization of Rio's clandestine van services is as elaborate and well–managed as anywhere in the world. Organization occurs at four distinct levels of increasing size and scope: the van itself, the route, the terminal, and the umbrella organization. The following description flows from the lowest to the highest level.

The front–line of van services is the free–lance operator. Based on field interviews, an estimated seven out often vans serving downtown Rio are owner operated, a figure that is consistent with the findings of other researchers.[33] Typically, vans are put into use whenever the owner–operator feels like starting the work day. Most work 12 hours a day, six to seven days a week (depending on season). Drivers who rent vans pay a flat fixed daily rate, usually around 90 Reais ($50). Most try to get as much out of the vehicle as possible, working 18–hour days beginning at 4 a.m. Those renting on a regular basis often get free use of the van on weekends, which means many put in long hours even if demand levels are lower – a situation that heightens levels of competition on Saturdays and Sundays.

In most instances, drivers hire touts to egg on customers waiting at bus stops, and when downtown, to lure in passengers heading toward bus depots. Touts also handle fare transactions. A tout takes away one fare since he occupies a front passenger seat, however because touts are so widespread, they evidently more than make up for losses by reeling in patrons.

Next up the hierarchy of internal organization are cooperatives. Vans plying a particular route usually belong to a self–formed cooperative, some of which are more formally structured than others.[34] The Baixada Fluminense district alone has 19 cooperatives that coordinate services on 32 different routes. Nearly a thousand operators belong to the Baixada co–ops.

Cooperatives function, in part, as collective bargaining units for groups of drivers to negotiate and secure downtown terminal space for picking up and dropping off passengers. Besides their role as social outlets for drivers, cooperatives also function as policing entities for protecting routes from piracy among non–members. Some also assist in securing credit and discount prices for vehicle maintenance and spare parts.

Many van cooperatives purchase protection from "hitters" to safeguard operators from robbers and to pay off police officers. Often, hitters stake out known areas of trouble, using radio communications to warn drivers and terminuses of the presence of police officers and to suggest alternative routes.

The locale where vans are most vulnerable from police crackdowns and a public backlash – the crowded streets and alleyways of downtown Rio – is where one finds a vital and indispensable link in the chain of van services, the off–street terminal. To the credit of Rio's clandestine van industry, it has embraced the use of off–street facilities for efficiently organizing and staging the collection and discharge of customers downtown (Photo 8.6).[35] The largest number of van terminals is concentrated near Central Rio's main bus and train terminals. Van terminals differ in size and operation according to the number of routes using the facility. The smallest terminals serve just one route. The largest ones are shared by as many as eight routes. Terminals are privately owned and managed. A route cooperative using a terminal pays a monthly subscription fee for a designated space. On top of this is a daily charge to each van entering a terminal. In mid–2000, the going rate was 8 Reais ($4.50) per day, or 2 Reais ($1.10) per vehicle entrance. Each van route has a clearly marked space, with a sign displaying the name of the cooperative and destination of the route. There is also a space for passengers to queue in line for the next departing van. Larger terminals have concession stands, public phones, and bathrooms for waiting passengers. To keep things running smoothly, each terminal has a *pranchesteiro* who keeps track of and directs the rhythm of vans entering and leaving the premises. Some terminals also hire their own touts, called *chamadores,* who lure potential bus riders and other people passing the terminal area. Several instances were observed where chamadores poached customers who were waiting for a bus at Rio's main terminal.

Highest up the rung of Rio's clandestine van sector, and what holds it together as an industry with influence, is what amounts to an inter–cooperative umbrella organization. The largest is called "Fecotral", representing all of the van cooperatives serving downtown Rio's central station area. By all accounts, Fecotral and other

umbrella units are politically well–connected lobbying organizations. Because franchise bus operators wield considerable political clout and continue to press for the crackdown on informal operators, van operators perceive their livelihoods as precarious and continually under threat. Paranoia has led to extraordinary measures to secure their positions. Fecotral maintains a full–time staff whose main job is to lobby politicians and work with the popular press to cast the van industry in a favorable light. The organization also acts to regulate entry into the van business to maintain high profit levels. Member cooperatives pay monthly membership dues for these services. Among the services provided by Fecotral are: funding and publication of a free monthly newsletter covering the state of business (Figure 8.1); handling of media representation, issuance of press releases, dealings with local politicians, and public relations and outreach; promoting goodwill among cooperatives; mediating disputes between cooperatives and terminal owners; sponsorship of surveys and studies on the clandestine van industry, including economic appraisals; assistance with securing lines of credit; acquisition of vehicle parts and services at discounted rates; and maintenance of collective insurance policies.

Photo 8.6. Rio's Off–Street Van Terminals.

Photo 8.6. Rio's Off–Street Van Terminals.

As shown in top photo, vans and customers queue during periods of slack demand. Once as van is full, it promptly departs the off–street facility. By placing terminals off street, Rio's van industry has avoided some of the congestion problems that plague informal transport in other parts of the developing world.

Figure 8.1. Inaugural Issue of the Newsletter *Expresso,* a publication devoted to "users and drivers of

alternative transportation in the state of Rio de Janeiro".

> The February, 2000 newsletter, published in–house by the umbrella organization, Fecotral, shows the Governor of the state of Rio de Janeiro at the helm of a clandestine van.

8.4.5 Economics of Clandestine Vans

By all accounts, clandestine vans are a profitable industry – in no small part due to its efficient and well–honed organizational structure. Van operators earn considerably more than their bus–driver counterparts and quite a bit above what most of their customers make. Simple calculations suggest that a driver leasing a van and working a full 12–hour shift can net about $65 (120 Reais) per day.[36] Owner–operators do even better, on average earning around $88 (160 Reais) per day. Both figures compare very favorably to Brazil's minimum daily way of $3.50 (6 Reais), the earnings of the typical van user of $11–$16 (20–30 Reais) per day, and the usual daily in–take of formal bus drivers of around $28–$30 (50–55 Reais). This is not to suggest van drivers do deserve what they make for they work long, hard hours, often times in harm's way. One driver who was interviewed had two vans stolen at gunpoint over the past three years, once by an on–board customer. As if a badge of honor, he pointed out bullet punctures in the roof of his Topic Luxo van, and was more or less resigned to such instances as an occupational hazard.

Transportation economists often use land–values premiums to impute the benefits of road and transit improvements. By enhancing accessibility, the benefits of a new road get capitalized into land values. Anecdotally, clandestine vans are producing substantial benefits as reflected by their impacts on real estate values in what once were moribund, down–trodden districts on the western edges of downtown Rio. During interviews, van operators noted that the terminals they now occupy and pay good rents for were largely vacant three years earlier. Instead of drug dealers and prostitutes, nearby streets are now occupied by street vendors and newly formed micro–businesses. Property–owners are receiving bank loans to rehabilitate buildings and upgrade sites. Rio's clandestine vans have unquestionably been a positive force toward economic redevelopment in what long have been some of its worst–off downtown districts.

8.4.6 Politics and Populism

Rio's clandestine vans have provided numerous benefits to both the riding public and van workers themselves, though at the expense of threatening the financial future of a very powerful local bus industry. They have brought about a redistribution of wealth by forcing highly profitable bus companies to hold their fares in check, more so than they otherwise would have. Cariocas, as residents of Rio are called, pay among the highest bus fares relative to their incomes of anyplace in the world, a product of franchisers being able to successfully petition for fare increases by exaggerating costs through various accounting shenanigans.[37] From 1994 to 2000, bus fares in Rio de Janeiro rose 273 percent, more than times the rate of inflation. A recent issue of *O Globo, a* popular local newspaper, ran a front–page article showing that bus fares increased more rapidly since the 1994 devaluation of Brazil's Real than any consumer item, faster than the rising cost of cell phones, petroleum, and electricity.[38] However, the pace of bus fare increases has slowed down dramatically in the past year due in no small part to the presence of cost–efficient clandestine vans. Vans have imposed a much–needed market discipline on protected and politically connected bus franchisers.

Clandestine vans have no doubt significantly enhanced the mobility of suburban dwellers, most of whom live by modest means. In a comprehensive assessment of Rio's privatized bus system in the early 1990s, prior to the onslaught of vans, Paulo Gimara and David Banister wrote:

> As a result of low levels of accessibility, peripherally–located populations have longer distances to overcome, spend more time in overcrowded vehicles, and have longer access and wait times for the buses. Often, due to lack of capacity, they cannot get on the first available bus, even at the terminus. Those living at the periphery are charged higher fares, and in proportion to their income levels, public transport costs are about 3–4 times above recommended levels. They are also likely to make more interchanges, and this results in a second or third fare being charged.[39]

There are signs that competition from vans are having ripple effects on bus operators, forcing them to diversify services and contain costs. Figure 8.2 shows that between 1993 and 1998, Rio's bus operators have introduced entirely new conventional and minibus services with air–conditioning. These premium services charge higher fares than those charged for regular bus services (twice in the case of conventional buses with AC and three times in the case of minibuses). One bus franchiser increased his minibus fleet from just four vehicles in 1994 to 25 modern and roomy vans in 1998.[40]

In sum, clandestine vans have aided the suburban poor not only by augmenting standardized bus services and offering greater mobility choices, but also by forcing franchised bus operators to be more cost–conscious and competitive. Imposing a market discipline on Rio's private bus monopolies can only lead to higher quality services at market–mediated prices.

8.4.7 Regulation and Oversight

Buses operating within Rio's city limits are regulated by the municipal transport authority while those linking the city of Rio to other municipalities in the metropolitan region are under state jurisdiction. To date, municipal and state authorities have treated vans and kombis with kit gloves, partly because of inadequate bus services and partly because of a lack of resources to stage mass crack–downs.

A recent analysis of Rio's informal transport sector by the city's urban transportation authority called for a pro–active regulatory stance that would significantly diminish and refine the role of vans and mini–vehicle services.[41] The study calls on vans to take on four narrow and complementary roles: night services that augment standard bus offerings; tourist and special charter runs; paratransit services for the disabled; and low–demand routes in place of full–size buses. While the report has found favor within technocratic circles, so far it has failed to galvanize much political support.

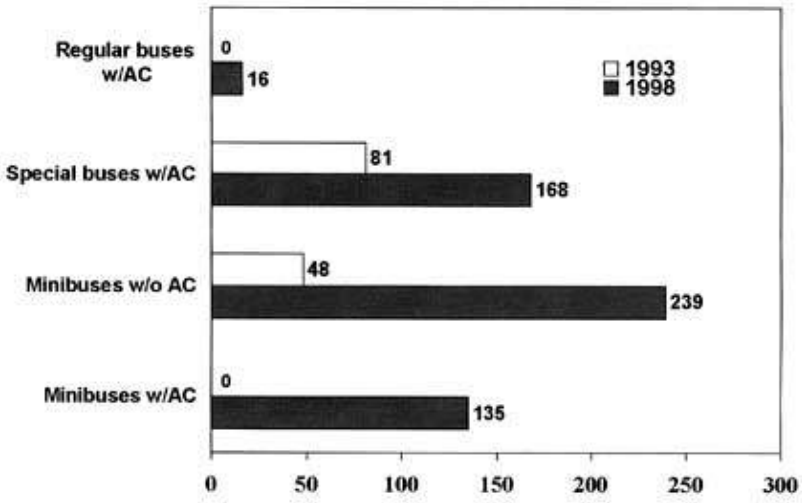

Figure 8.2. Changes in Numbers of Vehicles Operated by Franchiseed Bus Companies in Rio de Janeiro, 1993 to 1998.

Source of data: R. Balassiano and M. Braga, Buses & Vans: Assessing Public Transport Competition in Rio de Janeiro, paper presented at Sixth International Conference on Competition and Ownership in Land Passenger Transport Cape Town, South Africa, September, 1999.

8.5 Case Summary and Conclusion

Brazil's clandestine vans have unquestionably enriched service options within the urban transport sector. Many poor districts of metropolitan Rio and other Brazilian cities would be inadequately served, if served at all, by collective–ride transport were it not for clandestine vans and kombis. Not to be overlooked, informal carriers have also exerted market pressures on formal franchised bus companies who enjoy monopoly privileges and exert tremendous political influences. Particularly controversial have been the high fares and high profits of bus franchisers. Brazil's van industry is also to be applauded for internally organizing downtown staging and transfer activities at off–street terminal facilities, thus avoiding the kinds of traffic tie–ups that are blamed on informal carriers in other parts of the developing world. For these and other reasons, clandestine vans enjoy broad–based political support in many Brazilian cities.

While Brazilian experiences highlight the efficiency–inducing benefits of informal transport, they also point to the downside, notably the tendency of those who are unaccountable to operate unfairly, manifested in the form of interloping and customer poaching. Because many bus companies obtained long–term loans to purchase rolling stock, cutting back services in not a real option – they face monthly debt payments regardless if buses are on the street or not. The blame for this predicament lies more with poorly conceived

and designed franchise agreements than with informal carriers.

As elsewhere in the developing world, Brazil's policy–makers face a challenge in ensuring that healthy competition is nurtured while unfair competition is squashed. In light of the numerous research projects commissioned to study Brazil's burgeoning informal transport sector and the unusually robust data that have been generated, the country stands poised to successfully come to grips with its informal transport sectors, perhaps more so than anywhere in the world – politics aside.

Brazilian experiences also show that it is possible for once–informal operators to become formalized, with generally win–win outcomes. Notably, low–capacity vehicles in Porto Alegre have been integrated into the city's public transit network, operating as complements to the conventional bus system.

There remains some doubt whether, given the meteoric growth in unregistered vans in recent years and today's political realities, the experiences in Porto Alegre can be replicated in other Brazilian cities. Such sentiments were expressed in a recent survey of 57 transit managers from the private and public sectors throughout the country.[42] When asked whether they felt it was possible to control informal transport services through regulations, 28 percent only partially agreed and 37 percent disagreed outright. Among the 19 managers from cities where regulations were imposed on and enforced against informal operators, 16 percent felt the regulations had no impact and 26 percent felt they worsened the problem.

Notes

1. Associação Nacional de Transportes Públicos (ANTP) y Instituto de Pesquisa Econômica (IPEA), Aplicada, *Redução das Deseconomias Urbanas com a Melhoria do Transporte Público,* Brasilia, Brazil, August, 1998; updated figures provided by IPEA.

2. *Ibid.*

3. Associaggio Nacional das Empresas de Transportes Urbanos (NTU) and Associação Nacional de Transportes Públicos (ANTP), *Transporte Informal: Riscos de Não se Encarar o Problema de Frente,* Brasilia, NTU and ANTP, 1998.

4. Most popular are the Topic STD made by Asia Motors and Besta Pass B–202 by Kia Motors.

5. ANTP and IPEA, op *cit.,* 1998.

6. Bus fares are regulated by local municipalities, however Brazilian bus companies exert considerable influence over tariffs due to their strong political and collective bargaining positions. The ability of bus companies to paralyze a city through a prolonged worker strike is well recognized by politicians. By all accounts, Brazilian bus companies are able to generate profits through accounting practices whereby costs are grossly overstated by exaggerating outlays for capital purchases and accelerated depreciation of capital assets. Such practices allow bus to win approval for higher tariffs than are justified, ensuring high returns on investment. While customers ride in new buses because of accelerate depreciation practices (Brazil has the world's youngest fleet of buses), they do so at the expense of paying comparatively high bus fares relative to their earnings.

7. J. Waisman and G. Silva, 0 Perfil do Perueiro na Cidade de São Paulo, Escola Politécnica da Universidade de São Paulo, São Paulo, Brazil, unpublished paper, undated.

8. NTU and ANTP, *op cit.,* 1998.

9. *Ibid.*

10. R. Schroeder, Transport Woes Plaguing Vast São Paulo, *The World Paper,* March/April, 2000, pp. 5–6. The number of vans operating in São Paulo is largely unknown, with 1996 estimates ranging from 7,000 to 14,000. See: BENT, Em São Paul, Ônibus Perdern 10% de Passageiros par Peruas, *Boletim Executivo de Noticias de Transporte,* No. 279, No. Vi, June, 25, 1997; Waisman and Silva, *op cit.,* undated.

11. J. Waisman and P. Akishiro, Usuários de Lotações na Cidade de São Paulo: Perfil e Preferências, Escola Politécnica da Universidade de São Paulo, São Paulo, Brazil, unpublished paper, undated.

12. B. Costa, L. Lindau, C. Nodari, L. Senna, and 1. Veiga, Ônibus e Lotação, Uma Experiência de Convívio Regulamentado em Porto Alegre, *Viaçati Ukunutada Ônibus das Cidades Brasileiras,* A. Brasilero and E. Henry, eds., São Paulo, Cultura Editores Associados, 1999, pp. 337–370.

13. R. Balassiano and M. Braga, Buses & Vans: Assessing Public Transport Competition in Rio de Janeiro, Brazil, Paper presented at the Sixth International Conference on Competition and Ownership in Land Passenger Transport, Capetown, South Africa, September, 1999.

14. ANTP and IPEA, *op cit*., 1999.

15. Other factors that have contributed to the recent spurt in van services include: (1) reduced import duties that have lowered the purchase cost of higher quality foreign vans to a level comparable to that of domestic vans; and voluntary early–retirement incentives by the federal and state governments which have led to many civil servants leaving their jobs and starting their own businesses, including urban and inter–city transport. *Source:* Balassiano and Braga, 1999.

16. Logit Mercosul, *Plano Diretor de Transporte Público de Passageiros do Jaboatio dos Guararapes,* Porto Alegre, Brazil, Logit Mercosul.

17. E. Ferreira, *Transporte Alternativo – A Nova Realidade Das Empresas De Transport Pablico Urbano De Passageiros, Rio de Janeiro, Federal University of Brazil, Department of Transportation Engineering, Ph.D. Dissertation, 2000.*

18. R. Balassiano and M. Braga, How to Integrate Van Services into a Conventional Public Transport System, *Urban Transport Policy, P.* Freeman and C. Jamet, eds., Rotterdam, Balkerna, 1998, pp. 1043–1049.

19. Motorcycle–taxis have been given quasi–legal status in four other Brazilian cities: Goiânia, Macapá, Londrina, and Jaboatão dos Guararapes.

20. National Transit Union (NTU), *Transport Informal Nas Cidades Brasieiras.* São Paulo, National Transit Union, 1997.

21. Balassiano and Braga, op cit, 1999.

22. Clandestine buses operated only on limited numbers of radial routes to downtown Rio.

23. Other major outlying districts served by vans include the ‘West zone” and the Niteroi–São Gonçalo district to the north–east.

24. A September, 1998 survey of vans operating in the Baixada Fluminense conducted by the newspaper, O *Globo,* found the most popular van was the 14–seat Topic Luxo by Asia Motors, followed by the 11 – seat H1 00 Van DLX by Hyundai, Incorporated. *Source:* Programa de Engenharia de Transportes, *op cit.,* 1999.

25. Balassiano and Braga, *op cit.,* 1999.

26. These high–end numbers are reported in several publications, with sources evidently van drivers and other people 1n the know”. High–end numbers are reported in Balassiano and Braga, 1998. High–end numbers are also reported by the municipal transportation department, which places daily ridership on clandestine vans at 370,000, or around 10 percent of the 3.7 million passengers per day served by non–rail forms of mass transportation. Lower–end numbers are reported in the updated (1999) publication of Balassiano and Braga.

27. Programa de Engenharia de Transportes, *Transpose Alternative na Ligação Baixada Fluminense e Rio de Janeiro,* Coordenação dos Programas de Pós–Gracluação de Engenharia, Universidade Federal do Rio de Janeiro, February, 1999.

28. Balassiano and Braga, *op cit.,* 1999.

29. Programa de Engenharia de Transportes, *op cit.,* 1999.

30. Balassiano and Braga, *op cit.,* 1998, p. 1046.

31. Programa de Engenharia de Transportes, *op cit.,* 1999.

32. The following equation was estimated: DEMAND (estimated) = 5.451 + 0.433 (VANKM) + 0.071 (KMRATIO) – 0.251 (FARERATIO) – 1.1 74 (TIMERATIO) where variables, all measured in natural–logarithmic form, were as follows: DEMAND = daily ridership on van route; VANKM = daily kilometers logged by vans operating on route (serving as a scale factor); KMRATIO = daily kilometers logged by vans operating on route divided by daily kilometers logged by buses operating on route; FARERATIO = one–way fare of vans divided by one–way fare of buses for route; and TIMERATIO = median one–way travel time on vans divided by median one–way travel time on buses for the route. The r – squared goodness of fit for the equation was 0.246. The only variable significant at the 5 percent probability level was TIMERATIO. Elasticities – representing the proportional change in DEMAND relative to the proportional change of each explanatory variable, controlling for all others – are represented by the equation coefficients since variables are expressed in logarithmic form. The 18 routes in the Baixada Fluminense district which served as data observations were: Austin, Belford Roxo, Cabuçu, Comendador Soares, Engenheiro Pedereira, Heliópolis – Nova Aurora, Mesquita, Miguel Couto, Nova Campina, Parada Angelica, Piabetá, Ponto Chique, Queimados, São Vincente, Saracuruna, Seroédca, Santa Cruz da Serra, and Xerém. The source of the data was: Programa de Engenharia de Transportes, *Transporte Alternativo na Ligagçao Baixada Fluminense e Rio de Janeiro,* Coordenaçao dos Programas de Pós–Graduaçao de Engenharia, Universidade Federal do Rio de Janeiro, February, 1999, Tables 10, 11, 16, and 21.

33. Balassiano and Braga, *op cit.,* 1999.

34. Not all van operators belong to cooperatives, although the vast majority do. (One estimate places the share of non–affiliated operators at 5 to 10 percent.) These “renegrade” operators typically do not belong to a terminus, and instead cruise streets on the edges of downtown in search of customers, changing routes and schedules according to fluctuations in market demand.

35. For routes to the Baixada district, there are at least three associations which do not maintain terminuses for organizing van departures and arrivals.

36. This estimate is based on field interviews. Drivers average six round–trips, or 12 one–way trips, per weekday. Assuming an average pay–load of 11 passengers (a conservative estimate) and a fare of 2.50 Reais, each driver grosses around 330 Reais per workday. Cost estimates are tabulated as follows, assuming the driver leases the vans – an assumption that allows for the simplest calculations. A 24–hour van lease with unlimited kilometers costs around 90 Reais. With 12 trips each way per day, each averaging 40 km, the total daily kilometers logged per van is estimated to be around 480. Assuming a fuel–consumption rate of one liter per 5.5 km, an estimated 90 liters of gasoline are consumed each day. With discounted purchases of lowgrade fuel going for around one Real per liter, out–of–the–pocket expenses for fuel are around 90 Reais per day. A good tout will cost the driver around 18 Reais per day, including incidentals (cigarettes and meals). Terminal fees add 12 Reais to driver expenses, assuming six daily terminal entrances at 2 Reais per entrance. On top of this is around 2 Reais per day as the prorated membership fee for a cooperative. These cost totals match up well to national estimates of fixed and variable costs of running vans of 0.222 Reais per kilometer, which yields an estimated daily cost per vehicle of 107 Reais – 480 kilometers times 0.222 (NTU and ANTP, 1998). Using the higher cost estimate, the average estimated net profit is 118 Reais, or about $65: [330 – (90+90+18+14)].

37. A typical one–way bus fare is 0.90 to 1.2 Reais (50 to 70 cents), comparable to what buses charge. Daily minimum wage in Brazil is 6.5 Reais ($3.50 U.S.). Thus, for those earning minimum salaries, a round trip can consume between 15 and 20 percent of daily earnings.

38. Transporte no Rio Subiu 272% Acima da Inflação, *O Globo,* July 31, 2000, p. 1.

39. P. Gimara and D. Banister, Spatial Inequalities in the Provision of Public Transport in Latin American Cities, *Transport Reviews,* Vol. 13, No. 4, p. 368, 1993.

40. Balassiano and Braga, *op cit.,* 1999.

41. A. Torres, Policies to Control Informal Transport – The Rio de Janeiro Case, paper presented at the Ninth Annual Meeting of CODATU, Cape Town, South Africa, September, 1998.

42. NTU and ANTP, *op cit.,* 1998.

Chapter Nine: Informal Transport in Africa

As the world's poorest continent, informal transport services are as prevalent and extensive in Africa as anywhere. Low incomes, decrepit and sparse road networks, and failing formal transport options result in few mobility choices for most people. Besides walking, second–hand motorcycles, banged–up sedans and station wagons, and aging minibuses are often times the only available means of getting around. Yet Africa's informal transport offerings are also among the least understood in part because little concerted research has carried out to date.

While this report groups African experiences in this one chapter, Africa's informal transport sector is hardly monolithic. Minibuses are common in many cities, some functioning mainly as peak–period supplements, as in Addis Ababa, Ethiopia and Lusaka, Zambia. In Tanzania, they go by the name *dala–dala* for their one–dollar fare, while in Uganda, they are affectionately called *kamuny,* Swahili for "vulture", a reference to the way they swoop on passengers. Pick–up truck passenger services are also found, like the *fula–fula* of Kinshasa, Zaire. Some areas have pedicabs and, more commonly, two–wheel bicycle taxis while other parts of the continent are devoid of pedal–powered transport. Regulatory regimes also differ. In the suburbs of Abidjan, Cote d'Ivoire, competitive, small–enterprise services have been replaced by exclusive franchises granted to a few large bus and minibus companies. This contrasts with Dakar, Senegal, where private car operators, or *Cars Rapides,* have been given a free reign to carry whom they want and where, at whatever price the market will bear.

Hired–motorcycle services are widespread in many African cities, representing the fastest–growing form of informal services. This chapter reviews the experiences with Nigeria's *okada* motorcycle services, in particular. Fleets of what some Africans call *moto–taxis* are prevalent in many other areas as well, with one estimate placing the numbers at around 40,000 units in Cotonou, 20,000 in Lome, and 10,000 in Douala.[1] Around two–thirds of all motorized trips in Ouagadougou, Burkina Faso, are by motorcycle, with significant numbers of these representing for–hire, commercial services.[2] As in southeast Asia, the popularity of motorcycle–taxis lies in their inherent advantages: door–to–door service capabilities; fast speeds, especially in getting ahead of other traffic when a signal turns green; and ability to navigate around potholed and poorly interconnected streets. The combination of high youth unemployment and spotty, undependable public bus services has further spawned their entry.

9.1 Nigeria

Informal transport services thrive in all Nigerian cities to some degree. This section reviews experiences mainly in the nation's capital and primary city, Lagos, with experiences in several smaller cities also touched on.

Metropolitan Lagos, which stretches over some 1,800 square kilometers, is currently home to some 8 million–plus people. Traffic congestion is pandemic throughout the region, having steadily worsen since the oil boom years of the 1970s (Photo 9.1). In the past, motorized trips have grown more than twice as fast as the city's population.[3]

Poor public transport services set the stage for an influx of informal transport operators.[4] Between 1983 and 1992, Lagos's population of public buses fell by one–half. [5] Passenger transport operators throughout Nigeria struggle to cover operating costs while passengers face escalating fares for increasingly scarce services. The few public buses that run are invariably filled to the brim, and increasing numbers of Nigeria's city–dwellers must resort to walking and any other possible means of getting around.

Also working in favor of illicit transport services have been skyrocketing vehicle ownership costs. This has mainly been tied to Nigeria's faltering economy. Declining oil prices and a devalued currency saw sharp increases in vehicle costs. Between the 1984 and 1991, the cost of a motorbike increased in price to ten times that of what cars had previously cost, while salaries scales hardly changed.[6] Over the same period, the number of vehicles in Nigeria plummeted from 700,000 to 350,000 while the nation's population increased from 80 million to 91 million.[7]

9.1.1 Kabu–Kabu

Because of escalating private car prices, a steady stream of used imported minibuses and old cars have been pressed into service as unconventional and unregistered urban carriers, locally called *kabu–kabu* (Photo 9.2). Some are converted open–bed trailer trucks that formerly carried large seaport containers. Others are beat–up sedans on their last leg. Many are combi–vans and minibuses of several decades vintage that creep and belch along the routes they ply.

In the early 1990s, Lago's kabu–kabu consisted of some 2,500 *molue* truck–like vehicles with wooden or metal bodywork that carry from 25 to over 100 passengers (also called *bolekaja* and *gongoro),* 2,500 *danfo* minibuses, 21,000 shared–ride taxis, and far more numbers of motorcycle taxis, or *okada* (also called *achaba, going,* and *express).*[8] These numbers have since steadily risen. By comparison, in the early 1990s Lago's formal public transport sector consisted of just 250 buses which carried only 10 percent of passenger transport trips. The city's public bus system continues in a free–fall of deteriorating services. Between 1988 and 1994, the average time it took to complete a bus trip rose from 34 to 57 minutes, or by two–thirds, even though average trip length increased just 15 percent over the same period.[9]

Photo 9.1. Traffic Congestion in Lagos, Nigeria.

A mishmash of pedestrians, bicycles, sedans, vans, minibuses, and full–size buses compete for limited capacity along a major commercial street in the central city.

Photo 9.2. Kabu–Kabu Services in Lagos.

Unlicensed minibuses, cars, and station wagons line up for customers near an open–air market in Lagos, source; T. Bolade, urban Transport in Lagos, *The Urban Age,* Vol. 2, No. 1, 1993, p. 7.

As is often the case in poor countries, the capital city receives the most services and generates the most

ridership in proportional terms. In 1993, the 24 highest volume public transport routes among 300–plus routes nationwide were in metropolitan Lagos.[10] That year, kabu–kabu operators carried about 5 million passengers daily, or around one–half of all motorized trips in the region. On some routes, kabu–kabu services are the only transport services available.

Because of Nigeria's faltering economy and the consequent cuts in public bus services, demand for kabu–kabu services far exceeds supply. Queues are exceedingly long at terminals and stops, and the stampede to board vehicles can be terrifying. Knowing they can always fill their vehicles, owners have little incentive to shore them up. Most vehicles are old, dilapidated, poorly maintained, and routinely overloaded.

There are no official sanctions against kabu–kabu services, and lacking the resources to change the situation, government officials have accepted them as a "necessary evil". Kabu–kabu fills a market void left by a dearth of public bus services.

8.1.2 Hired–Motorcycle Services: Okada

As in much of Asia, Nigeria's fastest growing form of informal transport services has been the taxi–motorcycles, called *okada* (named for the nation's largest domestic private airline). The okada's niche market is passengers needing lifts from the suburbs to main transport routes and terminals.

An estimated 70 percent of Nigerian cities with over 250,000 inhabitants rely solely on motorcycles for intra–city public transport services. In Lagos and Abuja (the country's second largest city), motorcycles help shed some of the excess demand from larger modes by serving many short–distance commute trips and excursions to the urban fringes and other inaccessible locations. Due to the shortage of passenger cars, motorcycle taxis in all Nigerian cities are oversubscribed, with operators carrying as many as five passengers per trip.[11] Okada drivers normally pick up customers at major congregation points around the city and deliver them to their front doors. Accordingly, the spatial configuration of services tends to be "many–to–few".

Operators

As in Asia, Nigeria's motorcycle–taxi operators tend to have disadvantaged backgrounds, though they are better off than many other city–dwellers. A 1995 survey of 250 okada operators in Akure, a city of 190,000 inhabitants in southwest Nigeria, found that 62 percent had secondary education and 16 percent had post–secondary schooling.[12] The survey showed that one–half of respondents relied on driving a motorcycle as their primary source of income, and 38 percent depended on it to supplement their earnings. Over three–quarters of okada drivers worked 6 or more hours a day. Also, over half made 30 or more motorcycle trips a day, with an average waiting time between fares of 10 minutes and an average travel time per trip of 7 minutes. Much of the time, backseats were filled – according to surveyed drivers, four out of ten okada trips had two or more passengers aboard.

Additional insights into okada services come from a 1993 survey of 88 motorcycle operators in Yola, a medium–size city in northeast Nigeria.[13] The study characterized operators as having "low levels of responsibility and high risk–taking behavior" owing to the fact that 88 percent were 18 to 30 years of age and 47 percent had no formal education. Still, almost half of drivers were married and had dependents. Many drivers acknowledged they took risks like overloading their motorbikes because of the need to maximize earnings in order to support their families.

The survey also revealed that one–quarter of Yola's okada drivers worked part–time. Among full–timers, the average workday was 10 hours. For this, they netted around US$ 7 per day, in 1993 currency. Seventy percent of okada drivers owned their motorcycles, all of which were acquired second–hand.

Customer Profiles

The 1993 survey in Yola township also elicited information from 106 motorcycle users. Customers were generally: male (65 percent); young adults between 18 and 30 years of age (57 percent); in possession of a diploma from a secondary school or higher (83 percent); unemployed but in the job market (59 percent); and of low–to–moderate income levels (45 percent). Customers took motorcycles for virtually all trip purposes, however 28 percent said they would have preferred an alternative mode had one been available. Okada motorcycles were valued mainly because they are fast and readily available. Customers disliked them because they were considered to be unsafe (stated by two–thirds of respondents) and expensive (stated by 43 percent of respondents). The survey of okada customers in Akure also revealed customer concerns over safety – 61 percent felt operators drove too fast and 31 percent felt they drove too recklessly.[14] Left with few

mobility options, many suburbanites and ruralites patronize okadas well knowing the significant risks involved.

9.1.3 Safety

Accident records show that public concerns over transportation safety are well founded. During a two–month period in late 1989, Nigerian newspapers accounted the following incidences:[15]

- an overtaking accident involving two commuter molue minibuses on an expressway, killing 5 people;
- a two vehicle collision at bus stop, killing 15 passengers;
- an accident in which a loaded molue plunged into a river, killing 50 people;
- a road crash which killed 37 people;
- an accident whereby a pedestrian was killed by a molue;
- an accident at a bus stop killing 4 and injuring 62 people; and
- a molue–car crash at a bus stop, killing 7 people.

Nigeria's poor safety record is partly due to chaos on the streets. Kabu–kabu operators compete with motorists, motorcyclists, trucks, trucks, pedestrians, and food vendors for scarce, poorly marked road space. Conflicts occur everywhere, at all times. Inoperative traffic signals and missing road signs, both common occurrences, do not help matters.

Part of the problem also lies with escalating prices and, because of shrinking real incomes, the reluctance (and often inability) of vehicle owners and operators to pay for basic maintenance and upkeep. As a result, over 90 percent of Nigeria's vehicle inventory is mechanically unsound – often, brakes are worn, tires are bald, turn signals don't work, headlights are burnt out, roofs leak, spare tires are missing, and mufflers no longer muffle.[16] Most vehicles on the road have multiple defects.

Everyone agrees that the main contributor to accidents, however, is aggressive and unruly driving.[17] Most motorcyclists and kabu–kabu operators have little or no driving training. Traffic laws are routinely ignored and rarely enforced. Pedestrians and cyclists have virtually no rights. And compared to Asia and Latin America, there is relatively little internal organization or rationalization of services – queuing is disorderly, as is passenger loading and unloading. Accidents occur also because many operators use drugs to immunize themselves from the sun and the rigors of hard work.

9.1.4 Regulation and Organization

In Nigeria, responsibility for urban transportation affairs lies largely with local governments.[18] Cities license vehicles and, in Lagos, assign and oversee kabu–kabu routes. In practice, route assignments are ignored, thus Lagos's kabu–kabu services are for all practical purposes as unregulated as those of other Nigerian cities.

In 1996, the central government did step–in in a concerted effort to curb mounting emissions problems. Increased importation of old vehicles, mainly throw–aways from Europe (popularly called *tokunbo),* had noticeably worsened air quality in most Nigerian cities. In response, an age ceiling of 8 years from the date of manufacture was placed on all "tokunbo" vehicles imported into the country. Because this further inflated the cost of cars, the government caved into political pressure, removing the restriction two years later. This opened the floodgates to a new round of tokunbo imports. Today, governments at all levels have pretty much adopted a "hands–off" policy with respect to urban transport.

In the absence of official regulation, informal regulation occurs instead through associations, what Nigerians call "unions". Union members share terminals, with each terminal typically having around 100 operators, each assigned his own parking space. Unions coordinate with one another through city branches, state councils, and an umbrella association – the National Union of Road Transport Workers (NURTW).

Unions originally served as social networks for kabu–kabu operators, but with time expanded into areas like transport driver–owner relations, remuneration, and job security. They also assist members by acting as

guarantors for loans on vehicle purchases or repairs, and by mediating disputes between members and other parties. Furthermore, they set rules that aim to eliminate touting and disorderly conduct at terminals. Unlike government authorities, they are fairly effective at enforcing their rules due to the constant presence of NURTW officials at terminals.[19]

While unions have improved working conditions for their members, they have largely ignored matters of concern to the broader public, such as safety, vehicle upkeep, and the coordination of routes and schedules. They operate mainly on the principle that members are free to do as they wish as long as they do not encroach upon the rights of fellow members.

9.2 Kenya

The transportation scene in Nairobi, Kenya's capital city of 1.1 million inhabitants, has many parallels to Lagos. Nairobi too has experienced rampant population growth and mounting pressures to expand infrastructure. Similarly, the informal transport sector has assumed an important role in providing regional and inter–city mobility.

Nairobi's private transport carriers go by the name of *matatu*, a reference to the initial 30–cents fare charged for services. Today, matatus consist of an assemblage of shared–ride taxis, pickup trucks, minibuses, mid–size (midi) buses, and commercial trucks (Photo 9.3). Today, the most common vehicles are eight–seater Nissan Urvan and Toyota Hiace. Most were purchased secondhand because few operators have the capital for new vehicles and credit is difficult to obtain. In the late 1990s, there were around 5,000 matatus operating in Nairobi (over half the national total), carrying some 400,000 riders daily, or 70 percent of all passenger transport trips in the city.[20]

Photo 9.3a. Kenya's Matatu Minibuses.

Photo 9.3b. Kenya's Matatu Minibuses.

Sea of matatu minibuses congregate at termini on the outskirts of Nairobi.

Photo 9.3c. Kenya's Matatu Minibuses.

> The matatu is named Malcolm X. All Nairobi matatus are individually and emphatically named – Nairobi's current fleet counts among its membership 'Acid Splash', 'Bush Babees', 'Burning Spear', 'Public Enemy', 'Get and Die', 'You Move With the Best', and 'You Die Like the Rest'. Loud rap music blaring from built–in stereo speakers have become a trademark. Remarked one college student: "if you're in a hurry, you take the ones playing loud music – they go faster".[21]

Matatus are both competitors of and complements to public buses. They compete in the sense they follow the same routes and charge about the same fares. They complement in the sense they travel narrow roads and serve low–income areas not reached by buses. Also, many feature racks on top that are used to carry passengers' goods.[22] On the plus side, then, they provide cheap, flexible transportation services which relieve peak–hour loads throughout the city and provide essential services to low density routes. They are also more demand–responsive, a feature which has attracted middle–class customers. On the negative side, however, they suffer the fate of privatized transport services in much of Sub–Saharan Africa – overcrowding, unsafe vehicles, speeding, and reckless driving. For these reasons, matatu ridership is still dominated by students and the poor. Matatus are also relied upon by women. A 1992 survey underscored Nairobi's mobility gender–gap: while 24 percent of male heads–of–households used a car, only 9 percent of women heads did.[23]

Matatus have in their own way become of an icon of contemporary Kenyan urban life, known for their bright neon exteriors, high–decibel stereos, piercing and often–used horns, and dare–devil antics on the road. One colorful account describes them as follows:

> These privately run combi–vans, halfway between a shared taxi and a bus, seat about 10 people under normal circumstances. But when a Matatu, they car twice that number – plus babies, chickens and luggage. Behind the driver is a massive sound system pumping out an ear crumbling bass beat. A tout–cum–conductor hangs out a sliding door to collect fares and whistle and leer at passing women. The Matatus needs to be overloaded before the driver leaves and he'll wait hours if necessary. Then it's off at break–neck speed, passengers and he'll wait hours if necessary. Then it's off at break–neck speed, passengers staring stoically ahead as if contemplating their own corner of heaven. They are really stunned into silence by the driving and loud music. This is not for the faint–hearted.[24]

9.2.1 Economics of Matatu Services

Matatus are an important source of employment and generator of wealth in Kenya. Nationally, an estimated 8,000 matatus directly employ some 16,000 people and generate over $50 million in annual net earnings. The industry is made up of small business enterprises. Around a third of the national matatu fleet is driven by owners, and the rest by employees. Very few owners possess more than two vehicles. Originally, matatus were old jalopies owned by the not so well–to–do, however today most of the vehicles are owned by the very cream of Kenyan society, including senior government officials.

Each matatu operator employs an average of two persons, normally a fare collector and a tout. In 1993 currency the driver and conductor each averaged US$ 2,500 in annual earnings; the tout made about a third less.[25]

9.2.2 Regulations

The matatu emerged as a transportation mode in an environment of post–independence, rapid urbanization, and relaxation of traffic regulations, parking restrictions, and land–use controls.[26] They crept into Kenya's transportation scene in the early 1960s at a time when private passenger carriers were few and far between. The small number of matatus that operated at the time were aggressively pursued by the police as "pirate taxis". Their illegal status ended with a Presidential decree in 1973 which classified them as a legitimate Public Service Vehicles (PSV).

Despite legalization, most matatus continued to operate without licenses, much less insurance. It was not until 1984 that a law was passed that required that they obtain PSV licenses, undergo annual vehicle inspections, and take out insurance for up to 25 passengers.[27] Standards for matatu operations limited the maximum number of passengers to 25, and required that drivers be at least 24 years of age and have at least 4 years of driving experience. No controls were placed on matatu schedules, fares or vehicle designs.

While national regulation upgraded matatu service quality, a general disregard for load limits, speed limits, and other traffic regulations has increased accidents and compromised public safety. Kenyan authorities have moved slowly in addressing these problems, though as discussed below, new rules could change this.

9.2.3 Safety

Kenya has one of the highest traffic fatality rates in the world. Of the ten Kenyan deaths on the road each day, eight of them involve a matatu.[28] In the mad rush for passenger fares, a sort of devil–may–care mentality prevails on the streets.

The safety problems surrounding Kenya's matatu sector go beyond vehicle overloading, speeding, and erratic driving. Other contributors include limited understanding of traffic rules and regulations, poor road design, unorganized passenger loading and unloading, and the inter–mixing of vehicles of varying speeds and sizes, pedestrians, and street vendors on roadways. The absence of sidewalks and special lanes for slow–moving traffic is of particular concern given the frequency of accidents between matatus and pedestrians and cyclists.[29]

The absence of adequate infrastructure (e.g., bays for loading passengers) and safety enforcement, critics charge, reflects apathy towards the needs of the poor in general and, more specifically, a failure to recognize the important mobility role played by matatus. Part of the problem also lies, some argue, with the reliance upon foreign consultants who are unfamiliar with matatu services and who harbor a bias against informal transport services.[30]

9.2.4 Organization and Management

As in Nigeria, any rationalization of informal services that does occur is through the will of private operators themselves. Most matatu terminals in Nairobi have organized themselves into associations. Initially, associations formed to provide strength in numbers – i.e., to fight police harassment and lobby politicians for more parking spaces. Over time, their activities have expanded to include assistance in securing loans for buying vehicles, mediation of driver disputes, and management of driver queues. Association members pay fees for parking and association administration.

Nationally, an umbrella association, the Matatu Vehicle Owners Association (MVOA), has formed which has 17 branches in metropolitan Nairobi. The MVOA strives to promote cooperation between operators, assist operators find insurance coverage, set roadworthiness standards, and eradicate touting for customers. Another national association of matatu owners is the Matatu Associations of Kenya (MAK) whose aims are similar. Additionally, a number of matatu associations are registered independently of both MVOA and MAK. And appreciable numbers of matatu operators have shunned associations altogether, operating out of terminals at their own free will. It is because of such independence that associations have made little headway in setting service, pricing, and vehicle fitness standards.

The counterpart to the formal associations of matatu owners are the informal underworld associations of the industry's drivers, conductors, and touts. One observer, writing in the journal *African Business,* described the shadier side of the industry in the following terms:

> For the past decade or so, many Kenyans believe the matatu operators have been a law unto themselves. The industry has been so chaotic and steeped in corruption and underhand deals that the general Kenyan public has branded it as a necessary evil... Drivers have scant respect for traffic rules. To compound the problem, the highly under–paid and therefore often

> corrupt Kenyan police officer invariably looks the other way when the conductor shoves 'kitu kodogo' (Kiswahili for 'something small' and a euphemism for a bribe) into his hand. Touts, whose role is supposed to be attracting would–be passengers to the matatus and away from conventional buses, have ganged up into mafia–like cartels to fleece the owners. Anybody introducing a vehicle onto a route is forced by the route cartel to part with up to $1,000.[31]

It is because of such allegations that Kenya's Transport Licensing Board (TLB) recently introduced new rules in a bid to end the chaos on the streets. They include: formal licensing of all matatu vehicles by TLB; setting and allocation of routes by TLB; fee schedules for licensing, taxation, and mandatory insurance; elimination of touts; and required wearing of identification badges by drivers and conductors. In reaction, matatu drivers went on a four–day strike in July, 1999, leaving hundreds of thousands of workers stranded, unable to reach their jobs. As of this writings, these new regulations are still being negotiated, though so far Kenya's President Daniel arap Moi has stood firm on the matter, supported by a Kenyan public fed up with an industry many believe to be out of control.

9.2.5 Bicycle Taxis

While bicycle transportation is not very common in most African cities, parts of western Kenya, around Lake Victoria, have witnessed an explosion of "bicycle taxis".[32] The cooler climates of the higher altitude is part of the reason. These pedal–powered taxis haul passengers and goods on bicycle racks, some of which have been padded. Bicycles have caught on because they provide door–to–door connectivity, can negotiate narrow roads, and, since they are operated by local people, allow customers to travel on credit. Also, a bicycle taxi commences a journey as soon as person hops on the back whereas matatu minibuses wait usually until enough passengers board before they depart. The fare charged is not much different from the matatu minibuses that operate in the Lake Victoria area. For very long journeys to the countryside, however, bike taxis can be cheaper, as little as US$ 1.60 for excursions of 50 kilometers in length. Currently, half of bicycle–taxi operators rent their bicycles on a daily basis and net between US$ 3 and US$ 5 per day.

9.3 South Africa

Not all informal services in Africa are products of poor public bus services. South African cities offer respectable public bus transport yet private unregistered carriers still thrive. South Africa's 15–seat minibus taxis, also called *combis,* numbered around 80,000 nationwide in the early 1990s. They serve mainly informal settlements, shacklands, and squatter areas that receive (and can financially support) the least amount of public bus services (Photo 8.4).

Combi taxi services tend to be divided along racial lines – most are operated by blacks and "coloureds" who serve blacks and "coloureds" or else Indians who serve Indian. The group that never patronizes them are South Africa's whites (Figure 9.1). When whites patronize public transport, it is almost always aboard subscribed express buses or exclusive–ride taxis.[33]

While South Africa's minibuses pose all the same safety problems found elsewhere on the continent, they present a safety dilemma all their own – all–out, open warfare for customers. South Africa is a setting where there is little cooperation and much competition. Rivalries among combi operators vying for customers frequently lead to shootouts at bus stops and on highways. Minibus wars have cost the lives of thousands. Many drivers are armed with automatic AK47 assault rifles and wear bullet–proof vests when behind the wheel. Feuds and killings have become so widespread that even the nation's 50,000–member strong taxi association proclaimed that "taxi operators have turned the taxi industry into a battlefield rather than a business venture".[34]

Turf wars escalate when minibus operators move into someone's territory, whether actual or perceived. Many of the worst battles are between legal and illegal operators. Minibus killings have been linked to the glut of operators competing on lucrative routes. In and around Capetown, groups of machine–gun toting bandits have recently begun ambushing Golden Arrow buses, spraying them indiscriminantly with bullets. This has been in retaliation for Golden Arrow encroaching on routes traditionally dominated by illegal minibus taxis. Golden Arrow is a registered company that receives a government subsidy, enabling the company to charge lower fares than minibuses. During the first six months of 2000, six drivers and innocent by–standers had been killed and more than 60 injured in armed assaults. Violence continues in part because some minibus fleets are owned by senior policy officers.

One effort underway that aims to curb violence, crime, and fraud within South Africa's taxi industry is the introduction of cashless forms of payment. Through the efforts of a 35–member taxi association in Pretoria, a demonstration program has been introduced wherein taxis and minibuses operating in assigned zones are marked with route colors. Passengers pre–purchase matching color cards at post offices, service stations, and supermarkets and use the cards to buy lifts anywhere within the corresponding zone. At the end of the week, drivers exchange their colored cards for cash. Smartcards have been successfully introduced on a number of bus routes in South Africa, and authorities have high hopes the same will hold for minibus taxis.

Photo 9.4. Minibus in Soweto Township, Johannesburg.

The minibus operator solicits passengers as he passes a terminal. Source: M. Khosa, Transport and the "Taxi Mafia" in South Africa, *The Urban Age,* Vol. 2, No. 1, 1993, p. 9.

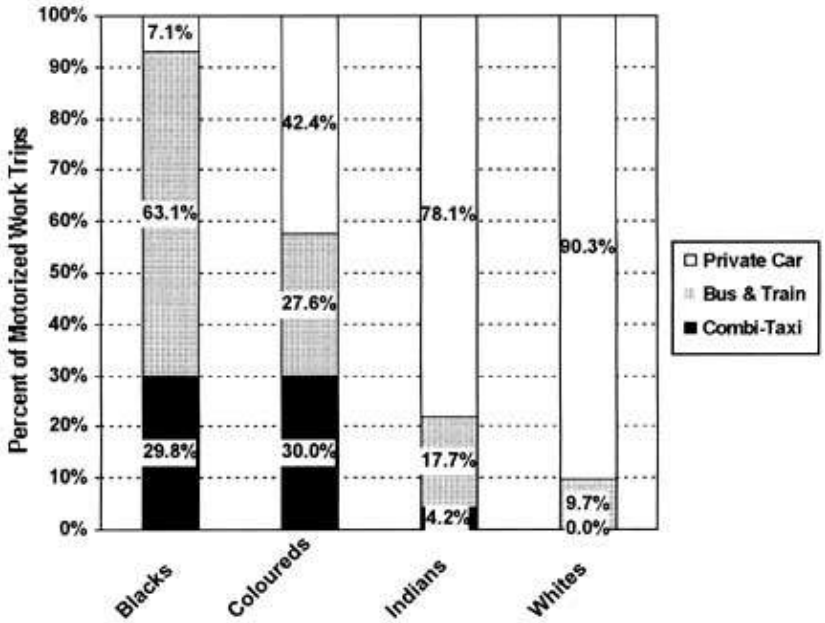

Figure 9.1. Shares of Work Trips by Motorized Modes of Transportation, by Race of Commuter, Pretoria, South Africa, 1995.

Source: Central Statistical Service, 1995 *October Household Survey,* Pretoria, Central Statistical Service, 1996.

Also liked by authorities has been trend away from minibuses to larger, 25–seater midibuses that run on efficient diesel engines. South Africa's midibuses operate similarly to minibuses, but much more safely and profitably[35] Passengers seem to prefer the bigger vehicles. So do traffic engineers who have long struggled to unclog roads clogged by too many fast–moving, lane–changing minibuses.

9.4 Other African Settings

This section briefly reviews issues and experiences with informal services in several other African settings – Niger and Ghana in west Africa, and Cairo, Egypt, north of the Sahara.

9.4.1 Niger

The influence of Nigerian hired–motorcycle services extend across its borders and into neighboring Niger where similar services thrive in all cities. In Konni, a city of 40,000 inhabitants, the *kabu–kabu* moped–taxi has emerged as one of the primary means of mobility within the core area and surrounding suburbs. Young women are the most loyal customers of moped taxis – in 1997, females made up 78 percent and teenagers 35 percent of ridership.[36]

Like the okada of Nigeria, Konni's *kabu–kabu* motorbikes have been left alone by local authorities, free to operate as they wish. Also as in Nigeria, Niger's motorbike operators have sought to self–regulate themselves through informal associations. The main role of Konni's associations is to enforce queuing rules at pick–up points and prevent turf battles. With instability in the Niger exchange rate, the profitability of kabu–kabu mopeds has also been unstable, leading to somewhat erratic services and swings in prices. Given there is no public bus service and private buses are oversubscribed, patronage of motorbike taxis continues to rise despite such annoyances.

Another common means of getting around Niger's cities and countryside is shared–ride taxis. A 1984 study provided glimpses of shared–ride services, called *redheads,* in Niamey, a city of a half million inhabitants.[37] Named after their red–color roofs, the redheads consist mainly of 5–seat Japanese and European sedans. Drivers aim in the direction of their first customer and seek to pick up as many heading in a similar direction without too much inconvenience for those who first board the vehicle. At the time of the study, redhead sedans carried 80 percent of public transport users in Niamey. While these numbers have since fallen, partly due to heavy taxes imposed on operators, private cars of all colors continue to serve large shares of motorized trips in Niamey and other parts of Niger.

9.4.2 Ghana

A study from the 1980s reported that five times as many unlicensed minibuses, station wagons, and trucks with benches – called *trotros* – operated in Kumasi, Ghana, a city of 700,000, as did public buses.[38] Most vehicles were in poor working order, however services were very demand responsive, operating far more frequently than buses yet at comparable fares. They also operated several hours longer the subsidized bus system on a typical weekday, normally from 5 a.m. to 8 p.m. For the most part, public buses provided just a skeletal level of service, with the real work of moving the masses around the city falling on the shoulders of private minibuses, sedans, and Bedford trucks.

Kumasi's troto services are mainly route–based, however deviations occur according demand. Operators pick up and drop off customers at designated stops though sometimes, at a passenger request (and for an extra fare), they will make an intermediate stop or a several–block detour. Troto terminals are generally found at or near designated bus stops or else on the edges of residential neighborhoods.

Tariffs charged by trotros (a term which means 30 cents) are regulated by the government of Ghana, though for the most part these strictures are ignored and fares are set according to what the market will bear. The central government also has set fitness standards for troto drivers and vehicles, however they are loosely enforced. While accident rates in Kumasi are not as high as those in other Ghanaian cities, the trotros are often criticized for being unsafe.

A recent study of injuries throughout Ghana linked transportation to 16 percent of all incidences in urban settings and 10 percent of occurrences in the countryside.[39] In cities, the most common transportation–related incidences were either to passengers involved in crashes of minibuses or taxis (29 percent) or to pedestrians struck by these vehicles (21 percent). In rural areas, bicycles made up most of the transportation injuries sustained.

9.4.3 Cairo, Egypt

A confluence of supply and demand forces has bred a wide–ranging and expanding informal transport sector in Egypt's capital, Cairo.[40] Poor roads matched by chronic traffic congestion is part of the explanation. Only around half of all roads in Cairo are paved or semi–paved; the rest are merely dirt pathways. Paved roads can handle around one–half million cars yet the city is choked with around 2 million vehicles at peak hours. Many passageways are too narrow for standard buses. Acute parking shortages partly account for rising public transport demand – studies reveal a parking deficit of around 20,000 spaces citywide. Today, Cairo, a city of some 7 million inhabitants, suffers from among the worst traffic congestion anywhere, with the average per–car stoppages placed at around 200 instances per kilometer in the central city (Photo 9.5).

The steady growth in informal settlements on the urban fringes has strained the region's already over−strained formal public transport services. An estimated one−half of car traffic is attributed to the unavailability of suitable public transport services. Stepping in to help relieve the city's traffic crisis have been non−metered taxis and minivans, called "service cars". The estimated 21,000 service cars make up 23 percent of the central−city traffic volumes. Service cars are popular because they are cheap and fast. Yet drivers routinely flout traffic laws and significant numbers operate without proper licenses. Motorcycle−taxis are also commonplace throughout the city, and steadily growing in numbers. Also found are animal−pulled carts *(El Karo),* offering a slow but cheap means of transporting people and goods. Animal carts are banned from the central city, concentrated instead in low−income parts of the city. Add to this the occasional pack−camel plodding the dusty streets of Cairo, and what emerges is a unique, rather bewildering mix of modern and traditional forms of transport squeezed into one of the world's densest cities.

Mounting congestion problems have prompted Egyptian officials to consider the imposition of stringent regulations on minivans and service cars. This presupposes, however, the ability of the city's formal operator, the Public Transport Authority, to dramatically expand its fleet size and service coverage. Limited funding support makes this unlikely. Fiscal realities, combined with an annual population growth rate of 3 percent that far outpaces road expansion, suggest Cairo's informal transport sector will if anything gain prominence in coming years.

9.5 Case Summary and Conclusion

Informal transport services are as pivotal to the transportation needs of African cities, townships, and rural areas as anywhere in the world. Services run the gamut from two−wheel bike−taxis to gangly truck−like contraptions that carry 100−plus customers. Motorcycle−taxis are everywhere, growing at an exponential rate. Operating environments are largely unregulated, which guarantees intensive and demand−responsive services, but which also classically results in numerous negative externalities associated with over−competition.

Photo 9.5. Minivans and Service Cars Swarm Train Station in Central Cairo.

Photo 9.5. Minivans and Service Cars Swarm Train Station in Central Cairo.

A classic case of agglomeration diseconomies, with vans and service cars congregating around a central train station and nearby street bazaar. In an all–out campaign to fend off worsening traffic congestion, the city has placed many of its rail lines underground and dramatically expanded metro–rail services.

More so than anywhere, poor, and in many cases non–existent, public bus services have created a huge vacuum for private entrepreneurs to fill. Services are universally oversubscribed, with hour–long queues not uncommon at bus and minibus terminals. Because of rising fuel and vehicle ownership costs, drivers routinely neglect basic maintenance and forego liability insurance. Banged–up, old jalopies that are seemingly on their last leg plod along many routes. The import of rejects from Europe and Asia has not only compromised public safety but has also fouled the air. While much maligned, informal minibus services, like Kenya's matatus, remain an essential part of transportation infrastructure in much of Africa.

More so than other cases reviewed in this volume, African experiences underscore the many safety concerns that surrounded unregulated and largely uninsured informal transport services. Government regulations are largely absent and where they exist, are essentially ignored by all sides. Officials have their hands tied for urban and rural economies alike have grown heavily dependent upon private carriers, regardless of their conditions or substandardness. Associations and unions have formed in most countries, however these forums exist mainly to promote the narrow interests of drivers and owners, not those of the public. The vast majority of Africa's private transport associations have steered clear of setting service standards, coordinating timetables, or recommending pricing systems.

Safety problems associated with transport services are symptomatic of wider economic problems that affect all sectors of Africa's urban economy. Some commentators contend that in order to effectively tackle the root causes of serious road accidents and traffic pile–ups, the primary focus must be placed on increasing per capita income in real terms, eradicating poverty, and narrowing inequalities in the provision of urban services.[41] While this is no doubt true, in the near term, basic transportation improvements like dedicated lanes and staging areas for buses, along with financial support, like the provision of micro–credit for upgrading vehicles and purchasing insurance, would go a long way toward upgrading and rationalizing informal transport cities in African cities and townships. More so than anywhere, Africa is a context where a multi–pronged approach of near–term relief of immediate problems and long–term strategic planning to improve macroeconomic well–being make eminently good sense.

Notes

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PART FOUR: Toward a Normative Policy Framework

This concluding part of this report advances a normative framework for rationalizing and enhancing informal transport services worldwide. Chapter Ten proposes enabling strategies with respect to organization, regulation, finance, infrastructure improvements, operational improvements, and pilot demonstrations. Chapter Eleven concludes with a summary of core lessons and findings, a near–term action agenda, and

ideas for future, follow–up research.

Chapter Ten: Strategies for Rationalizing and Enhancing Informal Transport Services

The case experiences reviewed in this study provide helpful insights into normative policies for rationalizing and improving informal transport services. It must be recognized that many competing objectives make policy–making in this arena especially difficult, and to some degree, difficult choices and trade–offs must be made. For example, the objective of providing mobility for the poor by allowing three–wheelers to share available road space conflicts with the objective of ensuring high and efficient levels of motorized mobility. The desire to protect the public by requiring certain minimum levels of liability coverage conflicts with the need to keep fares affordable to those who are barely scraping by.

This chapter advances a number of public–policy strategies that could go a long way toward rationalizing and upgrading informal transport services. Of course, not all approaches are suited for everywhere and different policy reforms will exert different influences in different places. The spirit of this presentation, then, is to provide a menu of potentially viable options that can be selected and tailored to the particular needs of a particular place. In all, seven enabling strategies are reviewed in this chapter: (1) management and organizational options; (2) regulatory reforms; (3) financial initiatives; (4) infrastructure improvements; (5) traffic management; (6) training; and (7) demonstration programs.

10.1 Management and Organizational Options

Case experiences show that self–regulation and self–policing amongst operators themselves can be effective means of promoting efficiency and safety within the informal transport sector. As reviewed in the previous chapter, route associations are natural forums for maintaining order and civility. They provide a grassroots structure for identifying and coping with industry–wide problems and for setting and enforcing basic performance standards and codes of conduct. If a member breaks a rules, be it head–running, driving recklessly, or taunting competitors, association members will bring the person to task. This might take the form of a one–week suspension, a monetary fine, or even expulsion from the group. Thus, orderly and organized behavior that is exhibited by informal transport operators often has more to do with internal self–monitoring and policing than it does with an external enforcement of rules and regulations.

Little prodding is needed by local governments since route associations are almost always self–initiated. Still, route associations are parochial, focused mainly on the welfare of members, not the riding public. Governments are in a position to reward those groups that do things within the broader public interest, such as setting safety standards (e.g., like the replacement of tires every two years) and enforcing orderly conduct at terminals. Government promotion might take the form of capital grants, underwriting and subordinating loans, tax exemption, or management assistance.

10.1.1 Bolstering Competition

A risk of collective action and inter–operator organizations is collusion and price–fixing. This is exactly what happened in Santiago and Mexico City, where route associations became ate *facto* cartels, extracting monopoly rents from consumers by limiting vehicle numbers and keeping fares high. The risk of cartelization can be reduced in several ways. One is to reward non–oligopolistic behavior. This can be done by tying public assistance to open competition and cultivating a mutual respect and understanding of circumstances and constraints among regulators and associations. Second, governments can make sure, through licensing and registration, that the geographic boundaries of associations overlap. Associations which compete amongst each other are less likely to gain monopoly control over routes.

Competition can be further bolstered by weaning public bus authorities from operating subsidies. Private operators are more inclined to cut corners and collude with each other when they have to compete with public buses which charge low, subsidized fares. While subsidies might be deemed necessary for social–policy reasons, the potential perverse effects they have on private operators needs to be recognized. Competitive tendering of unproductive public transit routes is one proven way to reduce government subsidies.[1] Transit subsidies are sometimes justified on “countervailing” grounds – notably, they act to offset the historical underpricing of mass transit’s chief competitor, the private automobile. Steps taken to eliminate all forms of subsidies in the urban transportation sector, be they assistance to bus agencies or free parking to motorists,

will help stimulate healthy competition to some degree, even among informal micro–bus and jitney operators.

10.1.2 Upgrading Internal Management

The institutional landscape of some private, quasi–informal transport services are quite complex and at times dysfunctional, as in the case of Kingston, Jamaica. There, a hierarchy of business relationships exists involving a number of middlemen. Currently, key participants include franchise–holders, absentee owners (many of whom are full–time professionals, such as lawyers and doctors), operators (including drivers, conductors, and touts), sub–franchisers (who broker deals between franchise–holders and operators), and the bureaucracy of regulators, planners, and policy–makers. This bloated arrangement is inefficient and makes service coordination nearly impossible. Ironically, Jamaican authorities originally turned to franchising in hopes of streamlining the delivery of bus and minibus services. What they witnessed instead was the emergence of new informal arrangements among many players, each pursuing a cut of the action of lucrative exclusive–franchising.

The Jamaican experiences underscore the importance of building internal management capabilities among private carriers. Most private operators know a lot about running and maintaining buses and very little about bookkeeping, labor relations, or marketing. Short courses and in–field training in the areas of accounting, finance, and business management could go a long way toward improving the organization of services in many settings. Where new schemes, such as exclusive franchising or competitive tendering are introduced, attention to matters of management training and institution building is all the more important.

10.1.3 Reducing Graft and Corruption

The inability of many informal transit operators to get ahead and build a personal nest egg is rooted in the systemic problem of widespread corruption and graft in the developing world. In many instances, politicians at the upper tiers of government tacitly allow unlicensed transportation services with the knowledge that they themselves financially gain from the system of pay–offs. In many cities with a sizable informal transport sector, extortion occurs in a decisively bottom–up fashion, with money passing from drivers at the lowest rung to neighborhood bosses at the middle rung and ultimately to top government officials, often from police and military institutions, at the highest rung. Payment is a *de facto* form of site rent – a fee for the right to occupy public spaces, like queuing areas, and operate in someone's "turf".

In a perverse way, corruption allows illegitimate drivers to operate while at the same time preventing them from ever becoming legitimate. Effectively, operators end up paying amounts comparable to what they might otherwise have had to pay to formally register and perhaps even purchase liability insurance. Unfortunately, payments go to enrich privileged individuals rather than to finance public improvements (e.g., off–street terminals, loading bays) or enforcement activities. Public involvement in the paratransit arena is largely reduced to shaking down poor, hard–working operators for a cut of their earnings. Because informal operators understandably view governments as parasitic, corruption and distrust remain huge obstacles toward building bridges and better integrating informal and formal transport services.

Anything done to stem corruption in the developing world would doubtlessly benefit the informal transport sector. A number of pedicab and micro–bus operators interviewed in the field cited extortion as the number–one problem they face. Of course, legitimizing pedicabs and other illicit carriers by formal registering them would largely eliminate the problem, though this should obviously be done for reasons other than corruption–bating. Certainly, increasing pay scales and compensation for civil servants would attack the root of the corruption problem, though at a considerable financial cost. Clearly, corruption is a problem that goes well beyond the realm of urban transport policy, but just the same, to those who make a living pedaling and hauling others to and fro, it stands as a gargantuan hurdle to personal advancement, and for this reason alone should not be ignored by transport policy–makers.

10.2 Regulatory Reforms

Stringent regulations that set rigorous standards on market entry, insurance coverage, operating practices, pricing, operator qualifications, and vehicle fitness – and that are matched by vigorous enforcement – would result in the virtual disappearance of informal transport services. They would also hurt the poor by removing mobility and employment options and incapacitate those bus systems that are already hard–pressed to meet consumer demands. Tough regulatory standards, if blindly and indiscriminately introduced, can backfire.

Still, in places like Kingston, Jamaica and Lagos, Nigeria, where unbridled competition has created harmful spillovers, the need for some degree of centralized control over supplies and operating practices is inescapable. Curbing over–competition can expedite traffic flows and induce more disciplined, responsible driving behavior.

Public oversight confers benefits to the riding public as well as the paratransit operator. For the public, regulation ensures *accountability.* Operators are held accountable to a standard that safeguards public safety and well–being. Regulations also extend important protections to informal transport operators. One, they help shield operators from the whims of enforcement officers, many of whom, as noted above, see informal operators as easy prey for bribes and shakedowns. In the absence of regulations, officials are allowed to make up their own rules and policies, usually to the detriment of operators as well as the riding public. Registration also provides protection against unscrupulous and predatory operators who attempt to intimidate their competitors. And by eliminating over–competition, regulations can help ensure a fair return on investment, enabling legitimate operators to purchase insurance, make repairs, renew their licenses, and generally stay above board. For pedicab and motorcycle operators, licensing also helps to reduce vehicle thefts, which is what happened when Shanghai implemented a system of bicycle registration.[2]

It is important to realize that regulatory reforms need to be stylized to the particulars of each situation. There is no one–size–fits–all approach. In some instances, controls over market entry might be justified while in others controls over tariffs might be in order. In crafting a regulatory regime, policy–makers must choose from a spectrum of options, as outlined below.

10.2.1 A Spectrum of Regulatory Options

In coping with informal transport, public authorities must decide the appropriate level of intervention along a spectrum ranging from inaction to banishment (Figure 10.1). The four main choices are: *acceptance, recognition, regulation,* and *prohibition.*

Acceptance means a do–nothing posture, an untenable option in many fast–growing mega–cities where the negative externalities of unlicensed informal carriers are rapidly mounting. More middle–ground policy positions involve *recognition* and *regulation* so as to incorporate informal services into the formal transport network. The key distinction between these two “middling” options is that “recognition” allows the marketplace to mediate levels of supply whereas under “regulation”, market entry and exit is externally controlled. Recognition involves the issuance and enforcement of rules and standards, mainly concerning permissible hours and areas of operations, curbside behavior, vehicle specifications, and labor practices. All carriers who meet minimum standards are free to start a business and are licensed accordingly; services are monitored to ensure rules are adhered to and standards are met. The aim is to make sure vans, minibuses, and micro–vehicles act as complementary carriers, and where they are allowed to directly compete with formal bus and train services, that they do so fairly and within the rules of law. Recognition–based policies can also focus on making the formal sector more cost–competitive, such as by relaxing cost–inflating strictures like labor–protection requirements. Lastly, *prohibition* invokes an outright ban on informal services. Violators risk fines, incarceration, and confiscation of their vehicles. Successful prohibition demands a strong policing and enforcement presence, meaning considerable financial resources must be directed to these purposes – resources that might otherwise be devoted to upgrading and empowering paratransit services.

Extreme policy choices, like acceptance or prohibition, are rarely the solutions to problems posed by informal transport. In most cases, a more prudent course of action is to recognize or regulate informal carriers, or some combination thereof. As noted, licensing and registration is essential in establishing accountability, enforcing standards, and protecting operators from the whims of unscrupulous individuals in positions of power.

In most instances, public welfare will best be served by allowing the marketplace to determine levels and types of paratransit supply, assuming there is a reasonable degree of contestability. A free, competitive marketplace will always do a better job than bureaucrats in setting socially optimal fares and fashioning routes and hours of operations that align with travel preferences. Experiences show that strict controls over service practices, pricing, and vehicle quality can backfire.[3] As long as a reasonably fair and contestable marketplace can be maintained, governments should in most instances stay clear of these matters.

Figure 10.1. Spectrum of Public Policy Responses to Informal Transport

The government of Nigeria's recent effort to limit the age of all *kabu–kabu* micro–buses and minibuses to no more than 8 years failed because the increased capital costs got passed onto consumers. The resulting political backlash forced the government to revoke the law. In Jamaica, the central government has long kept transit fares low as an expressed social policy for purposes of helping the nation's poor, albeit to the detriment of the transit industry's fiscal health. As a consequence, operators routinely overload their aging minibuses and break every traffic law on the books.

10.2.2 Regulatory Foci

The one area where everyone agrees some degree of central control and oversight is necessary is the area of safety and insurance coverage. Too many times passengers of uninsured carriers have had their lives ruined by injuries suffered in traffic accidents without any recompense. The bases for other regulatory controls, however, are less clear–cut. Where excessive competition leads to problems like aggressive driving and over–supply, limits on market entry might be called for. However, overly aggressive driving is often less a problem of liberal market–entry regimes and more one of lax and inadequate enforcement of traffic laws. Rather than banning market entry outright, a sensible response to unruly driving is usually stepped–up enforcement and stiffer sanctions and fines. Some observers contend it is ultimately impossible to regulate the number of informal operators in cities like Dhaka or Nairobi. Market pressures for their services are simply too great. A better approach in such settings is often to incentivize positive behavior through credit advances, infrastructure provision, and tax breaks.

Frequently, a stronger case can be made for regulating the emissions of minibuses and tri–wheelers than regulating their numbers, tariffs, or operating practices. Mexico recently introduced stricter standards for gasoline–fueled colectivo minibuses in highly polluted areas. Chile has imposed similar standards in Santiago. In Nepal, import bans have been placed on two–stroke motorcycles in a bid to improve air quality. Diesel–powered auto–rickshaws have been banned altogether, replaced, at least partly, by battery–operated, smoke–free tri–wheelers called safe *tempo* (clean pace). Because emission problems associated with two–stroke engines are universal, consideration should be given to setting international standards. The United Nations Industrial Development Organization (UNIDO) has made moves in this direction, funding work to harmonize vehicle emissions standards for all of southeast Asia.

10.3 Financial Initiatives

Two types of financial initiatives would materially benefit the informal transport sector. One is improving access to credit, a move which would impart equity benefits by allowing cash–poor, disadvantaged operators to accumulate capital assets. The other is financial incentives, like tax breaks and fee exemptions, which could improve efficiency by stimulating productive forms of free–enterprise transport.

10.3.1 Credit Access

Whether in Bangkok or Dehli, Santo Domingo or Bandung, relatively few pedicab, tri–wheel, or micro–bus operators own the vehicles they drive. Having to lease equipment on a daily basis prevents many from ever building assets and bettering their lives. Notwithstanding the issue of whether such vehicles should be on the streets in the first place, in the interest of poverty abatement and for social justice reasons, steps should be taken to assist more drivers acquire the vehicles they operate. One obvious avenue of increasing access to credit is through cooperatives and route associations. Cooperatives are in a position to provide collateral and guarantees in support of commercial loan applications. Still, many banks consider poor, uneducated informal operators to be too great of a credit risk. If they opt to issue a loan, interest rates are often exorbitantly high and terms are unattractive.

In recognition of these problems, local and national governments, in addition to international aid agencies, should step in as necessary to help private operators gain access to commercial loans. One way is for governments to provide favorable loan conditions through state–owned lending institutions, as has been done in Brazil – presumably for creditworthy individuals who meet certain minimum performance and fitness standards. In Bangladesh, various government agencies have issued micro–credit to rickshaw cooperatives, which at the peak of the program allowed the purchase of 3,300 rickshaws per year nationwide.[4] In cities like Surabaya, Indonesia, where becak operators average more than a 100 percent return on investment during their first six months pedicab ownership, the risks to lenders would appear to be fairly minimal. It is important, however, to make sure that loans go to the intended beneficiaries – drivers, not existing vehicle owners. Loan assistance should be targeted, to the degree possible, at operators who support large numbers of dependents from their daily earnings.

10.3.2 Financial Incentives

Governments can promote private transport through various fiscal mechanisms. Part of the rationale for aiding private carriers financially is that they relieve governments of the burden of subsidizing public bus services. The Commonwealth of Puerto Rico has taken this position. In recognition of the vital mobility role played by público minibuses and the subsidy relief they provide, público operators receive financial breaks including lower registration fees, excise tax exemptions on vehicle purchases, and low–interest loans (negotiated with local banks). Operators solely dependent on their público incomes for their livelihoods are exempted from paying vehicle–related excise taxes altogether. With público medallions worth as much as US$ 10,000 on the open market, operators use them as collateral to secure low–interest loans through the Commercial Development Corporation (a public underwriting agency) at participating local banks.

Vietnam officials have similarly turned to financial incentives to promote minibus services. With motorcycle–taxis continuing to lure customers away from Ho Chi Minh City's fading public bus system, Vietnam officials have recently introduced tax breaks and low interest–rate bank loans to allow minibus owners to renovate their aging vehicles. Officials hope to stimulate the growth in 12–seater minibuses, viewed by authorities as being best suited for the city's narrow streets. Fiscal instruments can also be used to incentivize the conversion of gross–polluting micro–vehicles to four–stroke engine designs and alternative fuels. India's allowance of tax credits has prompted Bajaj, Inc., the manufacturer of three–wheeled auto–rickshaws, to halt production of two–stroke models in favor of less–polluting four–stroke engines. In addition, a four–stroke CNG (compressed natural gas) auto–rickshaws is also being released.

Another fiscal initiative that would aid informal transport operator is the removal of subsidies to formal transit operators, such as fuel–tax exemptions. Similarly, pricing of motor fuels below market prices, as practiced in countries like Cambodia, Indonesia, and Venezuela, distorts the transportation marketplace because such subsidies do not extend to bicycles or pedicabs. If the removal of such subsidies and exemption is not possible, say for political reasons, then the second–best response would be to "level the playing field" by extending such privileges to operators of informal vehicles as well.

Oddly enough, fiscal policies penalize non–motorized transportation in some places. Despite the fact they are pollution–free and provide cheap transportation, some countries have imposed relatively steep import duties on bicycles, including pedicabs. For a number of years, the import duty on bicycles in Bangladesh was 150 percent, compared to only 50 percent for motorcycles and trucks.[5] In Africa, bicycles are viewed as luxury sports goods and taxed according. This partly explains why bicycle transportation has failed to gain popularity beyond a handful of rural regions of Ghana, Kenya, and Tanzania. In parts of Africa where import duties and other excise taxes have been relaxed or removed, populations of bicycles, including those used as hired transport carriers, have risen sharply.

10.4 Infrastructure Improvements

Two types of infrastructure investments would materially improve the quality of many informal transport services and reduce negative spillovers, like blockage of intersections. One is the construction of off–street improvements, like terminals and staging zones. The other is the provision of on–street facilities, such as dedicated high–occupancy vehicle (HOV) lanes.

Governments need to accept full responsibility for providing the physical channelways, terminal facilities, and staging areas necessary for well–functioning transportation systems. No other entity can do it. Their ability to acquire land through eminent domain, assess and collect road user charges, and pool resources places them

in a one−of−a−kind position to invest in and maintain fixed−facility assets. The European Community has adopted a sensible approach to infrastructure development. Virtually all European countries have functionally separated roadbed ownership and maintenance (including highways and rail tracks), which remain in the public domain, from service delivery, which is open to public and private providers through competitive tendering. In the realm of public transit, this means the provision and maintenance of tracks, terminals, stations, and bus stops are a public responsibility while the capitalization of rolling stock and provision of services is left to cost−conscious entrepreneurs. Such a model makes as much sense for informal transport systems as formal ones.

10.4.1 Off−Street Terminals

Terminals are important not only to manage and expedite customer boardings, alightings, and transfers, but also to remove vehicles from surface streets during periods of slack demand. Metro Manila's peak−hour transit fleet, for example, is more than twice the size of its midday and evening fleet.[7] Off−street parking is vital for keeping stationary jeepneys, vans, and private buses off of streets during inter−peak periods. Manila's business community has furnished many of these facilities to date. In several busy commercial districts, retailers lease space to jeepney, van, and bus operators to both generate income and facilitate the delivery of customers to their front doors. Many off−site terminals, however, have become magnets for street vendors and food hawkers who obstruct motorized as well as foot traffic. Thus, terminal development needs to be matched with on−site traffic management and enforcement to ensure efficient loading and unloading and guarantee site ingress and egress. This means revenues need to go not only toward capital construction but also on−going operations, management, and maintenance. Because retailers normally benefit from the nearby congregation of passengers, terminal areas are prime settings for public−private partnerships. While joint development is commonplace at terminals in developing countries, it is largely non−existent in the developing world, especially where paratransit services are involved.

San Juan, Puerto Rico has built more off−street terminals for private jitneys and commercial vans than anywhere. Funded by capital grants from the U.S. Department of Transportation, San Juan's multi−storey terminals support efficient vehicle staging, facilitate transfers between routes, and provide weather protection. Through an active police presence, terminals have also been credited with enhancing security and public safety. During off−peak hours, terminals function as holding pens – a safe haven where publicos queue rather than clutter the narrow and crowded streets of San Juan. During peak periods, demand is so high that vehicles need not stack up in terminals. Rather, minibuses pull into staging areas, quickly fill up, and proceed to their routes. The biggest terminal – a five−storey structure with 681 parking spaces (Photo 10.1) – is in the suburban community of Bayamón, the southern terminus for the brand−new Tren Urbano metrorail system.

10.4.2 Dedicated lanes

Because of movement conflicts and the vulnerability of many informal carriers to accidents, dedicated shoulder lanes should be provided, where possible, for pedicabs, cyclists, and other slow−moving modes along busy stretches of road. Since many third−world motorists ignore traffic rules and drive aggressively, physical separation of incompatible modes is often more appropriate than simple lane−stripping. Compared to the construction of off−street facilities, re−striping and dedication of lanes is relatively cheap. Because road space is already at a premium in most third−world cities, however, lane−dedications are usually only feasible where curbside parking is removed. Politically, this is usually only feasible if there is sufficient off−street replacement parking. In areas swarming with pedicabs and bicycle−taxis, bollards can be used to segregate traffic streams. Traffic calming techniques, like necking down intersections and jogging roadway alignments (e.g., chicanes), are also effective ways of deflecting regular traffic from pedicab zones.

Several Asian cities have set aside special facilities for non−motorized modes. In Yogyakarta, Indonesia, becak pedicabs are separated from other traffic along the city's main commercial street, Jalan Maliaboro. Lane widths allow three becaks to pass side by side. Signs warn motorcyclists and pedestrians to stay out of the dedicated lanes. Hanoi also physically separates the movements of motorized and non−motorized traffic, mainly through lane striping and signage. Poor road continuity and connectivity, however, have diminished the effectiveness of these strategies. In Dhaka, which has more rickshaws than anywhere, special non−motorized lanes have also been established, although only at three locations. Shanghai has the most dedicated facilities for bicycles anywhere, though the city has banned rickshaws as commercial means of passenger transport. Nevertheless, one still sees rickshaws hauling passengers and goods along narrow alleyways throughout Shanghai, despite government admonishments to the contrary.

Photo 10.1 Off–Street Terminal for Públicos in Bayamón, Puerto Rico.

During off–peak hours, público vans are stacked in a 5–story terminal in Bayamón, greater San Juan's largest suburb. Terminals provide vehicle staging areas, weather protection, and a security presence, in addition to facilitating transfers.

Less headway has been made in setting aside special lanes for minibuses and other high–occupancy vehicles in the developing world. This is partly because the development of minibus services and HOV facilities are rarely coordinated. In the mid–1970s, Kuala Lumpur liberalized the marketplace to allow the open entry of private, jitney–style services, called Bas Mini. A dedicated facility, the Pudu Busway, was suppose to be introduced in parallel with Bas Mini services, however the project never got off the ground. As motorization rates escalated in Kuala Lumpur, Bas Mini services found themselves increasingly mired in traffic snarls. When a trial bus–lane was introduced on one major route in the 1980s, it was quickly withdrawn because authorities felt it excessively burdened car motorists.[8] Had the HOV facility been introduced and integrated with paratransit service expansion, then Bas Mini services might have gained a stronger foothold in Kuala Lumpur's mobility scene than it has been able to achieve. This episode underscores the need to better integrate informal and paratransit carriers not only in a physical and logistical sense but also as part of the long–range strategic planning of facilities and services.

10.5 Traffic Management

Less expensive than capital investments are strategies that optimize the use of existing road space, sometimes referred to as Transportation Demand Management (TDM). TDM encompasses everything from changing signal phasing to favor busy approaches to banning truck deliveries during rush hour (practiced in Jakarta and Bangkok). These fast–action, quick–turnaround strategies can provide near–instant traffic relief, thus they are popular with local politicians. In very poor cities, traffic management schemes – like curb rationing, physical channelization of traffic streams, and controlled queuing of vehicles – can be far more cost–effective than "gold–plated" facilities like metros and expressways.

In cities with large numbers of pedicabs, traffic management is especially important. In Phnom Penh, regulations require cyclos to occupy far right–hand lanes, although in the absence of physical barriers, cyclos routinely weave into the main traffic streams. Many large Asian cities have taken to banning motorized tri–wheelers from major thoroughfares altogether.

Some cities around the globe have been particularly creative in how they manage and ration curb space. In Olongapo City, 125 kilometers northwest of Manila and home to the former U.S. Naval Base at Subic Bay, tricycle operators have been given designated pavement locations by the city in exchange for their keeping the sidewalks clean and clear of debris.[9] Another innovative program has focused on curbside management of jeepney queues in a heavily trafficked area. First–in/first–out queuing has been successfully introduced and enforced through joint monitoring by the local police department, city traffic aides, and field attendants employed by jeepney route associations. Strong political leadership on the part of the major of Olongapo City,

as well as multi−lateral coordination between municipal departments and route associations, were the key to the success of this program.

10.6 Training

Training and education about traffic rules, safe driving practices, and vehicle maintenance would help bring much−needed order and discipline to the informal transport sector. Training is especially needed in light of the poor educational levels of many informal transport operators, especially those who pedal for a living. Many cannot read or write. Illiteracy forms huge barriers to ascertaining knowledge about and learning the particulars of rules and regulations governing vehicle licensing, registration, and operating practices. Thus, outreach programs that are verbal and conversational as opposed to text−based are apt to yield the greatest pay−off.

The effects of communication barriers are underscored by experiences in Indonesia. In the late 1970s, when the Indonesian government was seeking to replace becak pedicabs with motorized bajajs imported from India, a training program was set up to teach becak drivers how to operate motorized tri−wheelers. However, tens of thousands of illiterate drivers could not read the newspaper announcements of program. Among those who did, many could not afford the course, which cost 35,000 Rupiah, about a month's of earnings in 1978.[10]

Training needs to go well beyond teaching good and safe driving practices. The stressful life of manning a minibus all too often leads to spats between drivers, conductors, and passengers. Training in the areas of customer relations and conflict resolution can help ease matters. Training resources also need to be directed to policing and enforcement activities. Expanded police training, along with the upgrading of enforcement equipment (e.g., two−way radios, cellular phones, modern motorcycles, etc.) and better compensation packages for field officers, would go a long way toward establishing discipline and orderliness on the streets of many third−world cities. Environmental benefits would redound from special training of mechanics and technicians who serve minibuses and micro−vehicles. In Dhaka, Bangladesh, some 400 auto−rickshaw mechanics recently took part in training courses that focused on maintaining and repairing engines, and properly using lubricating oils, so as to reduce emissions. This multi−laterally funded program was jointly sponsored by Uttara Motors and an non−governmental organization (NGO), the Society for Urban Environmental Protection.

10.7 Demonstrations and Pilots

Informal transport is an area where experimentation is sorely needed. The cost of failure is usually inconsequential. If a training program fails to cut accident rates or a credit extension program fails to increase vehicle ownership, the opportunity costs are fairly small − at least in relation to, say, a pricey metro that fails to deliver on ridership promises. The costs of timidity and continuing business−as−usual, however, are apt to be far greater over time. Given the many uncertainties that surround the informal transport sector, more pilot demonstrations are needed that provide on−the−ground lessons and inform public policy−making.

10.7.1 Curb Rights

A policy strategy that holds considerable promise for introducing efficiencies and rationalizing behavior within the informal transport sector is "curb rights".[11] Jitney and minibus operators aggressively fight for curb space in large part because the roadside is a "free" resource.[12] This leads to the classic "tragedy of the commons" − over−consumption of an under−priced resource. Alternatively, a value could be placed on curb access commensurate with what the market will bear and reflective of the external costs incumbent in unruly and excessive competition for waiting customers. This would amount to local traffic departments charging a site rent for the right of private operators to use stretches of reserved curb sides. A curbside might be painted distinct colors and assigned a visible number, for instance, and reserved for passenger boarding and alighting only by vehicles sporting the matching colors and numbers. A system of curb rights would minimize interloping and rationalize operating practices. Property rights would also prompt private operators to invest in new equipment, realign routes and schedules, and search out new markets since they would have greater assurances of receiving a return on their investments.

Under a curb rights system, a local government would need to set rules governing passenger pick−up and drop−off at curbs and confer rights to operate along particular routes. Income from user charges could go

toward enforcement and policing against interloping. Route associations might be enlisted to help enforce curb rights policies. To ensure accountability and above−the−board practices, however, a third−party NGO might be preferred for running the program.

Cities that might benefit the most from a system of curb rights are usually the places that are least able to introduce them. Poor countries where problems like interloping and cutthroat competition abound simply do not have the institutional capacity or financial resources to mount such bold experiments. This is clearly an area where external assistance is needed. First−world governments and international aid agencies might consider sponsoring such a demonstration as part of an urban sector loan or grant program. They alone have the resources necessary for designing, implementing, managing, and evaluating a curb−rights pilot initiative. It is particularly important that sufficient resources be devoted to project evaluation, ideally in the form of a quasi−experimental study involving before−and−after analysis of data from both “test” and “control” neighborhoods.

10.7.2 Other Demonstration Initiatives

Intelligent transportation technologies could potentially be put to good use in the informal transport sector. This need not involve high−tech gizmos, however. Simple two−way paging devices and cellular phones can be used to improve communications between terminal managers, dispatchers, and drivers. Bangkok’s van associations use cellular phones and two−way radios to communicate with drivers in remote holding pins to maintain order at major terminuses and control the queuing process. For higher−end services, like express minibuses, on−board navigational aids could help drivers avoid congested areas. For some tri−wheelers, hybrid motors that combine electric batteries and clean−fuel engines could, overtime, provide a cost−effective alternative to two−stroke engines. Smart card technologies also hold promise. Many South African taxi and combi−van associations have introduced stored−value debit cards as a means of not only streamlining fare transactions but also as a hedge against thefts and assaults. Because of the uncertainties surrounding advanced technologies in many third−world settings, a limited test−and−see approach is the most prudent course of action.

In most poor countries, low−tech approaches often make the most sense. Demonstration grants that go to outfit pedicabs and three−wheelers with safety reflectors and headlights that are kinetically powered could end up saving many lives. The provision of simple loading bays and elevated platforms can significantly expedite minibus boarding and alighting. Such low−tech demonstrations can produce immediate benefits at modest costs.

10.8 Close

Governments, cooperatives, NGOs, and international groups share the responsibility of advancing policies and programs that rationalize and upgrade informal transport services. Private pedicab, micro−bus, and jitney operators depend on government policies that clearly and consistently set the rules and provide transparent visions of the future. Investment decisions of private operators hinge partly on whether government policy−making is stable and trustworthy enough to risk long−term investment in capital assets. Private operators are particularly concerned about whether governments will reverse their policies after they have made costly investments to deploy new fleets, purchase land and build depots and maintenance facilities, and incur overhead costs in growing a company.

As to whether informal transport services should, as a matter of policy, be embraced, left alone, or promptly dismantled, there is no single prescription. The merits and demerits of each situation must be carefully weigh and assessed. In many rapidly industrializing areas, efficiency objectives argue for a curtailment of small−scale, unlicensed carriers. From an equity perspective, however, the costs of such action − in the form of immobilizing the poor, increasing unemployment, and necessitating expanded public bus services − can be far greater than many elected officials realize or are willing to admit. From a public policy standpoint, difficult choices must be made between competing efficiency and equity objectives in effectively dealing with the informal transport sector. The concluding chapter offers food for thought on how this might be approached.

Notes

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8. J. Mohamed, Wither Transport Plans for Kuala Lumpur? Progress and Challenges in Urban Transport Planning, in *The View from Within: Geographical Essays on Malaysia and Southeast Asia,* V.P. Keong and T. Bahrin, eds., Kuala Lumpur, Malaysian Journal of Tropical Geograpy, University of Malaysia, 1992.

9. Kirby, *et al.,* 1986, op *cit.*

10. L. Jellinek, *The Wheel of Fortune: The History of a Poor Community in Jakarta,* Honolulu, University of Hawaii Press, 1991.

11. For an in–depth discussion on this principle, see: D. Klein, A. Moore, and B. Reja, Curb Rights: *Foundation for Free Enterprise in Urban Transit,* Washington, D.C., Brookings Institution Press, 1997.

12. Garrett Harden coined the phrase “Tragedy of the commons” to draw a historical parallel between traffic congestion and the overgrazing of community – owned pasture land by privately owned cattle during the medieval age. Over – consumption caused the destruction of the commons area, forcing the abandonment of entire communities. See: G. Hardin, The Tragedy of the Commons, *Science,* Vol. 162, 1968, pp. 1243–1248.

Chapter Eleven: Policy Responses and Responsibilities

11.1 Capsulization

Throughout the developing world, a combination of market forces and deprivation have given rise to vibrant and wide–ranging informal transport systems. Informal transport often serves areas left unserved by formal transport carriers. They are the consummate gap fillers.

In many third–world cities, public transport services are notoriously inefficient and unreliable. Neighborhoods go unserved, equipment breaks down, buses belch smoke, and runs are missed. Part of the problem lies in the protected monopoly status of public operators. Lack of competition breeds inefficiencies. With no competitors, there is little incentive for public transport systems to curb costs, appease customers, or search out new markets. Drivers and managers draw the same monthly salaries regardless how many customers they carry. It is under such perverse market conditions that informal transport services have blossomed the world over.

In many areas, informal services are the only bonafide means of mobility available to the poor. They allow car−less, disadvantaged individuals to reach jobs, buy and sell produce, and access medical care. They also enlarge laborsheds, expanding the supply of workers across many skill levels from which firms and factories can draw upon. Pedicabs, tri−wheelers, and micro−vans are also an integral part of the distribution networks of many third−world cities, ferrying raw materials, furniture, equipment, and other goods in and out of neighborhoods.

From a supply−side perspective, micro−vehicles like pedicabs and mini−vans are able to enter the narrow alleyways and passageways of barrios, kampungs, and squatter settlements that are impossible to penetrate with conventional buses. They squeeze and maneuver into vacant spaces on roadways, increasing passenger throughputs. And they provide gateway employment opportunities to low−skilled young men, many of whom support entire families from their driver earnings.

Of course, as shown throughout this study, informal transport has its dark side as well. With lax enforcement and weak regulations, odds are that unlicensed operators will engage in open warfare in the quest for customers, clogging up streets, intimidating law−abiding motorists, and all−too−often causing accidents. They will also undermine the financial viability of legitimate and sanctioned operators. Laissez−faire transit in an environment of high unemployment is particularly dangerous. Absent accountability or enforceable standards, chaos and anarchy prevails on the streets. Not only public safety but also public health is threatened. Two−cylinder motorcycles and under−tuned micro−vehicles are often gross emitters of noise and air pollution.

All this does not mean the sector should be dissolved *carte blanche.* Campaigns to modernize urban transport by phasing out informal services can prove counterproductive. In some cases, pedicabs, motor−tricycles, and jitneys satisfy the needs of consumers more than modern “formal” carriers. More often than not, they complement mainline services by providing feeder connections and serving areas that public carriers do not, whether out of necessity or choice. And in some instances, the entry of cost−conscious and highly productive vans and jitneys poses problems only insofar as protected monopolists – be they public bus systems or exclusive franchisees – are unwilling or unable to curtail services in deference to what are superior services, as expressed by consumer preferences.

The many conflicting signals about the efficacy of informal transport services makes it impossible, from a public policy standpoint, to reach bottom−line conclusions on what, if anything, should be done about it. Each circumstance calls for its own careful assessment. In some settings, the social benefits of supplemental free−market services no doubt exceed social costs; in others they clearly do not. What is essential is that local authorities take a firm position on informal transport, choosing among the policy options (in most instances, somewhere in between the extremes of acceptance and prohibition) outlined in Chapter Ten. A head−in−the−sand posture guarantees that today’s problems will only worsen tomorrow.

What can be said with a fair degree of certainty is that the informal transport sector is indelibly tied to the pervasive reality of third−world poverty – fairly poor operators serving fairly poor people living in fairly poor neighborhoods in fairly poor countries. There is a strong, inverse relationship between economic well−being and the extensiveness of informal transport services. As cities modernize and prosper, the tendency is for transportation to become more formalized and orderly. Often, economic advancement will go a long way toward rationalizing the delivery of urban transport services. Rising wealth generates the institutional capacity and management skills necessary to design, operate, regulate, and maintain viable and productive services. Macro policies that stimulate economic growth and development can do as much to diminish the ill−effects of free−market transport and rationalize service delivery as anything. The notion that “the rising tide lifts all boats in the harbor” generally holds in the urban transport sector.

It is also true that standardization and uniformity of transport often accompany rising affluence as production transfers from the private to the public sector. If one ran a statistical correlation between the GDP per capita and average seating capacity of public transport, the association would no doubt be strong and positive. In South Africa, for example, rising incomes have seen a steady conversion of 15−seat combi−minibuses to 25−seat midibuses. As developing countries industrialize and prosper, an important policy challenge will be to exploit all the inherent advantages of private, informal−like services while avoiding the tendency toward uniformity and sameness that characterize formal transport.

11.2 A Paradox

A central paradox faced in informal transport is the need on the one hand to improve transport efficiency while at the same time championing the cause of social equity. This conflict is no more dramatically played out than in the attempts to rationalize the provision of non−motorized transport services. Pedicabs help the poor by providing cheap mobility but hurt the rich and motoring class by interfering with traffic flows. Increasingly, transport policies and resources are targeted at expediting car movements, which includes removing pedicabs and tri−wheels off the streets, however the consequences of such actions on those who are less fortunate must not go unnoticed. One must be on guard that policies aimed at promoting efficiency *(mobility for the rich)* are not at the expense of equity *(mobility for the poor).*

It is the poorest cities that seem to suffer the most from the ill−effects of unregulated informal transport services. However, poor cities are also the places where the benefits of informal transport services – like supplementing poor−quality local bus services, providing much−needed mobility for the poor, and providing gateway employment for recent rural migrants – are the greatest. Therein lies a paradox. A risk of tightening the regulatory noose is that urban transport services will eventually become more standardized and the motivations of operators to contain costs and maximize efficiencies will be weakened. Standards which upgrade service and vehicle quality are also apt to raise prices, potentially making informal services unaffordable, thus defeating the very purpose of these services. A recent World Bank paper on transport and poverty abatement issued this very warning: “government regulations, such as entry barriers for the informal sector and imposition of inappropriately high and costly service standards, may seriously remove viable opportunities for the provision and use of affordable services by the poor”.[1] A prudent approach is to gradually phase in regulatory controls as levels of wealth and institutional capacity increase. Thus, rather than sweeping reforms, any tightening of restrictions should be introduced along a strategic time line and with due consideration given to the broader equity implications of actions taken.

11.3 Lessons and Insights

The absence of hard empirical evidence and unequivocal research findings conspire against attempts to draw firm conclusions about the informal transport sector. The best one can do is ferret out general lessons and insights. Based on the case experiences and secondary literature reviewed in this study, several core lessons about the informal transport sector are summarized below.

• *Problems associated with informal transport are most severe in very poor countries with limited institutional resources and capabilities.* In the poorest countries of Africa and Asia, informal carriers are major contributors to traffic tie−ups and road accidents. Absent regulatory enforcement and decent public bus alternatives, privately initiated services are invariably poor and unsafe – vehicles are worn out, overloaded, over−worked, and minimally maintained. Air and environmental quality suffer as a consequence. It is in these countries that outside assistance is most needed to establish appropriate regulations as well as the institutional capacity and monitoring presence necessary to enforce them.

• *Public policies should focus mainly on safety and indemnity requirements. leaving most other matters to market forces.* Controls over market entry should be exercised only when and where there are clear signs of excessive and ruinous competition. This does not negate the need to register common carriers, however, to maintain accountability and monitor performance. Experiences show that matters related to service practices (e.g., routing and timetables), pricing, and levels of comfort and convenience should be left to the willful actions of suppliers and consumers. Matters like vehicle ages and seating capacities should similarly be left to market forces as long as minimum safety and environmental fitness standards are met. Government regulators should also steer clear of pricing matters. Forcing private carriers to keep fares below reasonable profit margins prompts them to cut corners, head−run, and overload vehicles. Government strictures that shift the burden for subsidizing mobility for the poor to the private sector are unfair and will inevitably backfire. Experiences in Jamaica show burdensome price controls to be a sure formula for chaotic and undisciplined transport services.

• *The mobility role of pedicabs and other non−motorized carriers generally diminishes with city size and incomes.* Few mega−cities allow non−motorized commercial services because light−weight, slow−moving vehicles are thought to significantly worsen traffic conditions. Most

cities over several million population have banned pedicabs and rickshaws outright, sometimes with the exception of tourist spots (where they are heavily regulated). Consequently, pedicabs often migrate to the metropolitan fringes and exurbs or to more remote, lower–tier cities. The nature of informal transport problems tend to be qualitatively different in large cities versus smaller and medium–sized ones. In bigger cities, issues over congestion and environmental impacts of illicit carriers tend to capture the

• *Route associations are indispensable forums for bringing order, discipline and rationality to the informal transport sector.* As cooperative organizations, route associations help temper the instincts of free–lance operators to interlope and impinge upon each other's businesses. Some also provide direct services ranging from assisting with credit arrangements to managing logistics at busy terminals. Empirical research from Jakarta conducted for this study found that cooperative membership increases the odds of becak–pedicab and ojek–motorcycle operators owning the vehicles they drive and is also associated with low accident rates. In many poor countries, route associations focus solely on the welfare of operator–members, avoiding issues related to service coordination or public safety. Getting them to enlarge their domains of interest to include broader public concerns remains an important policy challenge.

• *Rampant corruption imposes significant hardships on informal transport workers.* Illicit transport services exist at the hands of political graft and corruption. Because of their minimal education and skills, informal transport operators are vulnerable and easily exploited by those in positions of power and authority. Many hard–working pedicab and micro–vehicle drivers are never able to break out of the cycle of urban poverty because of the "overhead" expenses they must pay to local police and enforcement officers. Extortion payments add costs to services, meaning poor people end up picking up the tab. Graft and corruption reflect deeper societal and institutional problems that go well beyond the plight of the informal transport sector.

• *Informal transport services impose public health costs that provide justification for some level of public intervention.* In parts of Sub–Saharan Africa, Asia, and the Carribean, informal carriers are involved in disproportionate numbers of injury accidents. In the Indian subcontinent and much of southeast Asia, two–stroke engines used by motorcycle–taxis and auto–rickshaws emit extremely high levels of air toxins in addition to raising ambient noise levels. The long–term epidemiological impacts of pedaling customers for a living in highly polluted environs are not well understood. Original research conducted for this study revealed significant problems of chronic back and joint aches and high incidences of coughing and respiratory problems among surveyed becak operators in Jakarta.

• *Political leadership is essential in designing successful enabling policies and programs governing private paratransit services.* Since low–cost, small–scale transport is usually not a matter of high political priority, the special needs of informal carriers often get sidelined in the world of day–to–day politics and resolve is required to design, implement, and sustain these efforts. Leadership on the part of respected local politicians is particularly vital.

11.4 Setting an Action Agenda

A menu of actions and programs is presented in this section. Based on the findings of this study and the core lessons summarized above, these initiatives are thought to offer promise and hope for enhancing and bringing order to the informal transport sector.

• *Aid*. Financial resources are essential for providing the infrastructure, training, credit assistance, and institutional build–up necessary to support a viable and socially productive informal transport industry. Developing countries rarely have the resources nor always the inclination or wherewithal to provide funding support. External assistance must be turned to. Foreign and multi–lateral aid packages to the urban sector should earmark funds for the informal transport sub–sector. Earmarking is necessary since other transport projects, such as for highway expansions, will invariably win out over programs aimed at assisting paratransit in the competition for scarce resources. Historically, informal transport has been entirely overlooked in foreign–aid programs for urban transportation. If recognized at all, the

sub–sector is treated as an afterthought and rarely integrated into capital facilities planning and programming. To give this sub–sector legitimacy and much–needed recognition, and most importantly to enhance and more tightly regulate services when and where justified, future aid packages should set aside development funds.

• *Loans and Access to Credit.* This study has highlighted the uphill struggles that operators of informal transport services face in securing credit and building equity ownership. Improved access to lines of credit would enable hard–working, largely unskilled pedicab, minivan, and jitney operators break out of the cycle of poverty and for some what amounts to indentured servitude. Many operators are in hock to middlemen who lease paratransit vehicles purely as a sideline business. Eventual ownership of vehicles would enable them to substantially raise daily take–home pay and build a financial nest egg. Loans at competitive commercial rates would help alleviate poverty in mega–cities of the world to some degree since, as this study has shown, significant shares of operators support entire families from their meager earnings.

• *Institution building.* Developing the organizational, management, and knowledge skills needed to oversee successful urban transport programs is pivotal toward rationalizing informal transport services. Special programs need to be mounted that focus on strengthening institutions at all levels of government. An example is the Sub–Saharan Africa Transport Programme (SSATP), recently established to upgrade professional capabilities within municipal organizations in the areas of urban mobility planning and non–motorized transport development. Non–government institutions, such as driver cooperatives and owner associations, also should also be strenghtened and legitimized to the degree possible.

• *Indemnification.* A likely outcome of increasing earnings by freeing operators from burdensome vehicle leasing is that more would be in a position to purchase liability insurance. Of course, enforceable regulations governing liability coverage would need to be in place. Credit might also be made available for operators to purchase liability insurance. Indemnifying informal services is especially important in very poor settings where the risks of serious accidents are high. However, these are also the places where insurance is often viewed as a luxury. One idea that deserves consideration is universal insurance coverage which is funded by an excise tax placed on motor fuel purchases. This could take the form of an ad valorem excise tax as a hedge against the revenue–eroding impacts of improvements in fuel economy.[2] Pay–at–the–pump insurance coverage would promote the twin goals of raising auto–motoring costs, which studies universally show fail to cover true social costs,[3] and of providing financial protection to informal transport customers.

• *Training and rewarding responsible behavior.* Resources also need to be irected at training and professional development. Some minimum level of training and knowledge should be tied to licensing and registration wherever possible. One option is to issue a provisional license, valid for three months or so. Upon the completion of a training course, a permanent license could be conferred. The cost of training should not be prohibitively expense, otherwise the effort is all for naught. Also, there should be formal graduate ceremonies that provide certificates to successful participants (since formal recognition confers respect, esteem, and pride in many cultures of the developing world). Safe–driving awards and good–driving insurance discounts and rebates are other ways of encouraging more socially responsible behavior.

• *Strategic planning and programming.* The needs of the informal and paratransit sectors should be incorporated into the long–range urban transportation planning process. Simultaneous planning of formal and informal services will ensure better integration and coordination. As informal carriers take on more clearly defined roles, their integration with formal modes is essential toward the development of balanced and sustainable multi–modal transportation systems. In Porto Alegre and several other Brazilian cities, once–informal operators who competed with and poached from formal bus systems were – through multilateral negotiations – eventually integrated into the city's public transport network. Today, vans and minibuses complement rather than undermine fixed bus routes by functioning as distributors and feeders. To further promote service integration, conventional transportation planning models need to be revamped. Nearly all commercially available modeling packages focus exclusively on motorized vehicle trips, thus the entire mindset of the planning endeavor becomes one of optimizing traffic flows and speeds. New planning techniques and approaches are called for that recognize that the majority of trips in urban areas around the

globe do not take place in private cars.

• *Demonstration programs.* Much is unknown about the efficacy and potential effectiveness of policies targeted at the informal transport sector. In light of this uncertainty, a prudent approach is to pilot–test various policy reforms before full–blown implementation. Cities where both the benefits and ill–effects of free–market transport are magnified and which are receptive to new ideas are the best candidates for field demonstrations. As noted, “curb rights” is an elegant idea with considerable promise that begs to be field–tested. Curb rights, if backed up by vigorous enforcement, would impose an economic discipline on informal operators by placing a scarcity value on the currently “free” resource, curbside space. Not any city, however, would make an appropriate demonstration site. Most importantly, there must be the institutional capacity to mount, implement, and enforce the demonstration program. A medium–size city in a low–medium–income country would most likely have the political and institutional wherewithal to field–test the curb rights concept.

11.5 Future Research

Given the many unknowns surrounding the informal transport sector, there remains a crucial role for good, solid research and evaluation in coming years. One area where knowledge gaps remain is the social costs of unlicensed urban transport services. Research is needed that enumerates the effects of informal carriers on traffic congestion and accidents and allows welfare judgements to be drawn. A quasi–experimental study framework, involving both “test” and “control” neighborhoods, could prove useful for assessing the effects of unregistered carriers on traffic flows and accident incidences. A region like greater Jakarta could prove a good case context. For example, while becaks and bajajs are banned within the city proper, immediately beyond the city limits such carriers are commonplace. One could thus compare congestion levels and accident rates between comparable neighborhoods just inside and just outside the city boundary.

Comparisons of passenger car equivalents (PCEs) are typically used to assess the relative efficiency of movement among various modes. Larger vehicles like conventional buses usually fare better than minibuses and micro–vehicles on this basis. However, PCE comparisons fail to reflect the maneuverability and acceleration–deceleration advantages of paratransit modes, thus understating their throughput efficiencies. Other benefits of small–vehicle transport that are often overlooked in technical studies are more frequent, on–time services and demand–responsive delivery. Techniques like discrete–choice (logit) analyses can be used to gauge the utility and perceived value of these service features. Benefit–cost analyses which tabulate full benefits based on willingness–to–pay criteria and tally fully–allocated economic (as opposed to financial) costs should be relied upon in allocating resources to the maximum extent possible.

To date, no comprehensive study on the safety implications of informal transport has been carried out. Accident statistics usually record incidents based on classes of vehicles and types of accidents, but do not distinguish whether the parties involved included paratransit carriers, and if so whether the driver had liability insurance and was at fault. Grant funds should go to upgrading accident reporting to incorporate data on characteristics of paratransit modes and operators. A city with extensive and wide–ranging informal transport services would be a good candidate for such a reporting enhancement program. The resulting data could be used to assess the relative frequency and severity of accidents among informal carriers relative to other modes (e.g., formal bus services). The incidence of liability insurance coverage could also be investigated.

Better insights are also needed on the equity benefits of informal transport services from both a user’s and a provider’s perspective. One useful study would involve a comparison of vehicular trip rates per capita among residents of two comparable neighborhoods with the exception that one has extensive informal transport services and the other does not. For example, a comparison of trip rates between two kampungs, one situated within the boundaries of Jakarta (where becaks, helicaks, and other micro–carriers are banned) and one outside (where they are not), could provide a valid matched–pair framework for gauging mobility benefits. Detailed travel diaries among inhabitants of carefully matched neighborhoods would allow differences in trip rates to be stratified by purpose (e.g., work, shopping, medical care) and demographics (e.g., gender and age). Travel diaries would also highlight the role played by informal carriers in serving origin–destination patterns not covered by formal bus routes as well as in providing feeder connections to mainlines. Matched–pair comparisons between paratransit–friendly and paratransit–unfriendly neighborhoods could also reveal differences in employment rates and monthly earnings and highlight the role of informal carriers in explaining differences.

While statistical comparisons provide a more objective framework for assessing the impacts of informal transport, they often overlook subtle yet important factors that sustain this industry, such as its value as a source of employment. Often, qualitative case studies can best illuminate such benefits. Cases also highlight best practices. And they provide “color commentary”, something that statistical techniques sorely lack.

As importantly, case materials often resonate with those whose opinions ultimately matter most – public officials and others in positions of power who must make tough choices regarding the future of informal services.

Evaluations should be an integral part of all pilot–demonstrations. The natural tendency is to devote the vast majority of resources to program development and field–testing, with evaluation treated more as a secondary consideration. Credible research designs can help de–politicize test projects, allowing them to be assessed more objectively based on their social and economic merits and drawbacks. In addition to the assessment of curb–rights field tests, well–designed evaluations of the traffic–flow and safety benefits of off–site terminal improvements, traffic management schemes (e.g., dedicated lanes), stepped–up enforcement, and improved vehicle maintenance would go a long way toward rationalizing and finding a proper role for informal transport in the world’s developing cities.

Notes

1. Z. Liu and C. Gannon, Transport, Water and Urban Development, Infrastructure Notes, Washington, D.C., The World Bank, 1999, Transport NO. OT–6, p. 3; available at: http://www.wohdbank.orgn/htm llfpd/transport/publicatltd–0t6.htm.

2. A consumption, or a per litre, surcharge would mean that as fuel economy improves, less revenue would be collected on a per kilometer basis. On the other hand, an ad valorem, or per monetary–expenditure, surtax would buoy revenue income in line with rising fuel prices.

3. For example, see: J. MacKenzie, R. Dower, and D. Chen, The Going Rate: *What It Really Costs to Drive,* Washington, D.C., World Resources Institute, 1992; Natural Resources Defense Council, *Uncovering Hidden Costs of Transportation,* Washington, D.C., Natural Resources Defense Council, 1993; D. Lee, *Full Cost of Pricing Highways,* Cambridge, Massachusetts, John A. Volpe National Transportation Systems Center, 1995; and T. Litman, *Transportation Cost Analysis: Techniques, Estimates, and Implications,* Victoria, British Columbia, Transportation Policy Institute, 1995.

Appendix A: Survey Protocols for Field Research Conducted in Bangkok, Manila, and Kingston

The attached forms were used as protocols for conducting field interviews in Manila, Bangkok, and Kingston. Interviews were held with three different groups of stakeholders: informal transport operators, customers, and government officials. Separate protocol forms were used for each group.

CUSTOMER SURVEY

Place: Date: Surveyor: _____ Date: _____ Surveyor: _____

(1) Why did you choose _____ (this mode) for this trip? _____

(2) Your trip:

Purpose _____
Destination (address or place) _____
How much money do you expect to pay? _____

(3) Your opinion of quality of public transport services on a 1 to 10 scale (1 = very poor, 10 = excellent)?
_____

(4) What do you like about _____ (this mode) services? _____
_____

(5) What do you dislike? _____
_____

(6) How many trips by___ (this mode) do you typically make in a week? _____

If possible:

(7) Do you own a house? Yes NO; What street or neighborhood do you live in? _____
_____

(8) Annual income: Personal _____ *and/or* Households _____

(Specify currency _____)

Characteristics:

Sex of person Male Female
Approximate Age < 18 19–30 30–45 46–60 >60
Location of interview (trip origin) _____

Time of day _____

Notes:

Government Officials: Interview Protocol

Name of person: _____ Organization: _____

Date: _____ Place: _____ Interviewer _____

Role of Organization:
_____
_____

What are benefits of _____ (mode)? _____
_____

What are costs? _____
_____

CORE ISSUES:

Regulation _____
Market entry_____
Routes _____
Times/Hours of operation _____
Vehicle age, quality fitness _____
Driver fitness _____
Congestion/environmental relief _____
Corruption/extortion _____

*** Level of competition** _____

***Organizational approaches** _____

Existing _____
_____
Preferred _____

_____

Promotional/Enabling Policies

Financial aid _____
Loans Education (driving, maintenance) _____
Facilities: terminuses/parking _____
Facilities: special lanes _____
Facilities: others _____
Others _____

*** Equity considerations**

Value in providing mobility for the poor _____
Value as a source of employment _____
Relief of public transport operations _____

Other core issues:

Survey of Informal Transport Operators

Place: _____ Date: _____ Surveyor: _____

SUPPLY

1. How long have you been doing this work? _____

2. Why did you get into this business? _____

3. Vehicle Type: _____

4. Vehicle Age: _____

5. Hours work per week: _____

6. How many accidents have you been in the past two years? _____

Describe _____

7. Which terminal s/locations do you operate out of? _____

Do you cruise for customers? _____

8. How many other operators are you typically competing with per day? _____ How would you characterize the degree of competition from 1 to 10 (1 = virtually none, 10 = severe) _____

DEMAND–MARKETS

1. How many trips do you serve on a typical day? About how many kilometers do you carry people per day? _____

2. Where are the main destinations you take people/goods? _____

Purpose of trip _____

3. What's the average fare per trip? _____

4. What are the busiest times of the day or week for you? _____

5. Who is your typical customer (e.g., do they have a car; socio–economic status) _____

6. Why do you think your customers chose your service versus public transport (bus)? ___

ORGANIZATION:

1. Do you own your own vehicle or lease it? (A) own (B) lease (C) Other _____

2. Do you work independently or for someone else. (A) independent, (B) Someone else
_____
_____

3. Are you part of an association/cooperative? Describe _____

4. Registration.

Do you have a license' or registration to provide the service? (A) Yes (B) No Is the vehicle registered? (A) Yes (B) No

ISSUES

Regulation: _____
_____
Safety: _____
_____
Corruption: _____
_____
Traffic Congestion: _____
_____
Other(_____): _____

POLICY OPTIONS – REACTIONS:

1. How difficult is it for you to obtain money to purchase and maintain your vehicle? Would easier access to credit and loans be of value to you?
_____

2. Would you welcome government help in providing terminals, parking zones, or special lanes for informal transport (_____)? Which would help most?
_____

3. More self–regulation and self–policing of operations through a strong association?
_____

4. Training program on driving safety and vehicle maintenance?
_____

5. What other things could be done to help your business?
_____

ABOUT YOU:

1. Age _____

2. Birthplace _____

3. Are you married? (A) Yes (B) No; if so, how many children _____;does your family live in the city or elsewhere?_____

4. How much money do you make a week? _____

5. Do you have debts associated with your work? (A) Yes (B) No. If yes, what are they and how much do you have to pay a week? _____

NOTES:

Survai Becak & Ojek, Jabotabek

PANDUAN KUENIONER:

1. harap diing kode berikut: tidak tahu, TJ = tidak ada jawaban, TA = tidak ada

1. Lebih baik mendapatkan jawaban yang berupa PERIKIRAAN dari responden dar pada membiarkan

Appendix B: Survey Approach And Questionnaire: Study of Becak and Ojek Services in Jakarta, Indonesia

Thirty−six becak operators and thirty−six ojek drivers were surveyed at four different terminals in Jakarta, yielding a total of 72 responses. Two of the terminals were in the inner city (Kota and Gudang Peluru) and two were on the fringes of the region (Depok and Bekasi). This survey design thus provided a four−way classification of small−scale informal services in metropolitan Jakarta with 18 observations in each cell of the 2x2 matrix: central−city becaks; fringe−area becaks; central−city ojeks; and fringe−area ojeks.

The four terminals were selected with the aid of a non−government organization, the Urban Poor Consortium (UPC), based out of Jakarta. UPC has mapped 1,372 becak locations in the metropolitan region. Throughout consultation with UPC members, the four chosen termini were felt to be representative of becak and ojek operating and market environments for the region as a whole. Students from the University of Indonesia conducted the field interviews using the questionnaire shown in this appendix. Surveys were conducted in October, 1999, just before Jakarta officials reinstated the ban on becaks.

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