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I am submitting herewith a thesis written by Emmett A. Taylor entitled "Hacks: A Public Transportation Complement in Philadelphia, Pennsylvania. I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment for the degree of Master of Science with a major in Civil Engineering.

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HACKS: A PUBLIC TRANSPORTATION COMPLEMENT IN PHILADELPHIA, PA.

A THESIS PRESENTED

FOR THE MASTER OF SCIENCE DEGREE

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EMMETT A. TAYLOR

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DEDICATION

To my beloved children and loving wife: Boika, Tonia, Klade-Maima, Boimah, Bindu, and wife, Josephine, whose loves continue to strengthen me day to day and has been the main source of my emotional support throughout the years.

"extremity in defense of virtue is no vice

- Barry Goldwater 1964.

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ABSTRACT

The cost to operate conventional transit in urban areas is so high that many urban transit systems in the United States operate at a deficit which many cities and states government are no longer willing and in some cases, not able to pay for. Large sections of some urban areas are not being adequately served by conventional fixed route and fixed schedule transit. In Philadelphia the inadequate traditional transit service in some sections of the city has given rise to an innovative paratransit supply service known locally as "a hack or hacks". A hack is a privately owned automobile used for public transportation purposes at a prearranged fare between the driver and the user.

Hacks operate out of informal terminals because they do not meet the requirements mandated by the state of Pennsylvania to operate public transportation. It was observed that hacks are playing a meaningful role in meeting the mobility needs of poor people who live in certain sections of Philadelphia that are not adequately served by traditional transit systems.

A one month survey of drivers of hacks and their passengers was conducted to determine their characteristics;

for example, their social and professional status, their income level and vehicle ownership etc. It was determined that the hack operation transports substantial amount of passengers and generates substantial revenues on an annual basis without government intervention.

The operators of the hack service were found to be mostly men and majority of the users were women. Both operators and users varied in age from the early twenties to late sixties.

It was also observed that the peak hours operation of hacks cannot be thought of in terms of peak hours for conventional transit services. Hacks level of ridership was uniformly distributed throughout the day, unlike conventional transit.

It is recommended that concerned public agencies assist in developing hack into a viable transit mode by relaxing some existing regulation and assist in planning while staying clear of all subsidies. It is also recommended that further studies be conducted on the overall productivity of vehicles used as hacks.

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ABBREVIATIONS

CBD - CENTRAL BUSINESS DISTRICT

MSA - METROPOLITAN STATISTICAL AREA

PMSA - PRIMARY METROPOLITAN STATISTICAL AREA

PSGR(s) - PASSENGER(s)

PHILA. - PHILADELPHIA

PA - PENNSYLVANIA

PENN. - PENNSYLVANIA

PUC - PUBLIC UTILITY COMMISSION

PRTC - PHILADELPHIA RAPID TRANSIT COMPANY

SEPTA - SOUTH EASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY

CHAPTER 1

INTRODUCTION

I. BACKGROUND

Throughout the United States urban transportation has over the past several years been characterized by increasing ownership and utilization of privately owned automobile, thereby causing a reduction in ridership and profit of traditional urban transit Systems leading to an increase in urban traffic congestion. Since the "energy crisis" of 1973, ridership increased slightly on few traditional systems but have stabilized at 7 percent of personal trips each day in the United States(1).

Increasing costs of operating conventional fixed route and fixed schedule transit is forcing some communities to curtail the frequency and hours of service and/or discontinuing service in less patronized areas. It is therefore evident that a need exist to provide public transportation in those areas which conventional transit cannot or do not adequately serve.

For resolving the mobility versus cost dilemma, paratransit

options such as vanpool, carpool and jitneys have received increased attention as alternatives to some conventional transit service.

Hacks (as they are called in Philadelphia Vernacular) are privately owned automobile used as public transit and they are frequently overlooked by transportation officials as a substitute for public transportation because they are illegal and there is a limited understanding of this mode. Hack can be considered an intermediate mode between taxis and buses. They operate out of discretionary or informal terminals, that is to say they have no fixed stand nor terminal as taxi usually do. They must select their terminals using visual inspection, and making assumption that the selected terminal location will yield high level of demand for hacks, and the area will be free or nearly free of law enforcement personnel. Some operators have operated hacks for many years and are aware of those location where there is a higher level of demand. Hack operators tend to utilize mostly intermodal transfer terminal of conventional transit as their standing and pick up points. Once a pick up is made, hacks almost always operate on deadhead time returning to their terminal. Since they have no marks of identification to distinguish them from the automobiles used

by the general public, they are rarely hailed by potential users.

There are social and economic problems associated with operating a privately owned automobile as public transportation, which are drawing more attention from the public and also from operators of conventional public transportation in Philadelphia. For example:

1. the adverse effect on ridership of conventional public transit;

2. the lack of general safety standards prescribed in state and local codes and laws for the safe operation of a public transportation system;

3. the evasion of taxes and other applicable revenues because of their inherent illegal nature; and

4. other problems resulting from excessive numbers of vehicles operating on urban streets and freeways causing an increase in pollution and congestions etc..

Hacks, which are an illegal form of transportation are quite synonymous to the "gypsy cabs" in New York City and "drays" in Baltimore Maryland.

The scope of this study is to examine hack operations, its organizational structure and its productivity along with a discussion of the evolution of public transportation in Philadelphia. The analysis will strive to determine the role of hacks in complementing other public transportation services in meeting the mobility needs of the public in Philadelphia.

II. NEED FOR THE STUDY

Hacks have existed in the city of Philadelphia (in one form or another) since the early 1940's during the second World War(2). They were and still are a low-cost form of public transportation for the urban poor especially blacks, whose neighborhoods in many respects are not adequately served by conventional mass transit. The cost of using the regular taxi service ($1.75 for the first 7/10 mile and $0.20 for each additional 1/10 of mile) is too high for the poor family.

For some urban poor the operation of hacks serve to supplement income, whereas for others it is an activity indulged in

inorder to remain active subsequent to retiring. There are also those who operate hacks as a primary source of income. As noted previously this form of paratransit does not meet basic legal requirements for operating a transportation service, but still they continue to cruise the streets of Philadelphia uninhibited and with fear of law enforcement officials.

The author has ascertained that no comprehensive study on the operation of hacks in Philadelphia has been performed. Hacks are transporting thousands of people and generating considerable amount of revenue. It is surprising, therefore that with such a large scale semi-clandestine operation in Philadelphia, no study has yet been done.

III. OBJECTIVES OF THE STUDY

This study strives to determine the demand and supply characteristics of hacks operation in Philadelphia. These characteristics are defined in terms of:

1. Operator Characteristics: socioeconomic characteristics of operators of hacks, including their age and ethnic characteristics, professional status and income level.

2. User's Characteristics: socioeconomic characteristics of users, professional status and income level, reasons for using hack service and alternative considered.

3. Trip characteristics: trips purposes, travel time and trip length.

4. Cost to operate hack service: revenue intake versus out-of-pocket operating cost. Is personal vehicle used or is there a dedicated vehicle only for hack operation?

5. Safety: Safety in terms of crime, vehicle maintenance and insurance coverage - operators' view point and users' view point.

6. Review of regulatory environment under which hacks operate.

7. Recommend programs to assist planners and government

agencies form a strategy to develop hacks into a viable paratransit operation.

IV. METHODOLOGY

Hacks operate out of many discretionary or unauthorized terminals throughout Philadelphia. The terminals are discretionary because these sites are neither designed nor intended to be used for such a service. Since it is virtually impossible to identify a hack while it is leaving or returning to a terminal, the operators tend to choose certain locations throughout Philadelphia's neighborhoods as their terminals, which are familiar to the users of hack, to carry on their operation. For this study the four most widely used terminals were chosen and observed, and they are:.

1. the Superfresh Supermarket at Wayne and Chelten Avenues intersection in the Germantown section of Philadelphia;

2. The Thriftway Food Market at Broad and Stenton Avenues in the Logan section of Philadelphia;

3. The end of the Broad Street subway line (an intermodal transfer point) at Broad Street and Olney Avenue in North Philadelphia; and

4. At 52nd and Market Streets (also an intermodal transfer point on the Elevated Market/Frankford Line) in West Philadelphia. (See Figures A-1.1, thru A-1.4 Appendix)*.

A case study approach was used in this study, and it focuses on three main factors--social, economic and legal--which primarily influence hack operations. Review of literature research procedures were also used to obtain factual information included in this text dealing with legal and historical issues.

The Philadelphia Area Metropolitan Planning Commission was generous in providing extensive data on population, age and employment distribution and also data on vehicle ownership and land use. The Pennsylvania Public Utility Commission was also instrumental in providing information on operating public transportation in Pennsylvania and the associated legal ramifications.

* see appendix for figures and tables

Additionally, a substantial number of personal interviews were conducted by the author with people directly and indirectlyassociated with the hack operation.

A questionnaire was developed, and it for the most part contained open ended questions for drivers of hacks and their passengers.

A sample size of forty operators and two hundred passengers was chosen for the survey. The two hundred passenger sample size was decided upon when the variations in passengers responses were found to be too small. Each sampled operator recorded pick-ups and runs during a single day between 6:30 a.m. thru 6:30 p.m. during a one month period of July 18th to August 20th, 1990.

Seven drivers were chosen on each weekday, three on Saturdays and two on Sundays. Operators were chosen randomly not to bias the data in favor of a particular group, (i.e. part time vs full time drivers).

The author has had a strong interest in the operation of hacks and their role in complementing the traditional public transportation in Philadelphia. Consequently, the author spent numerous hours with operators of hacks during their normal

operating hours collecting data for the study. As an incentive to acquire the cooperation of the operators and passengers, and to compensate for the time lost by both the drivers and passengers, the author paid $2.00 per interview to each operator and $1.00 reduction in a passenger's fare for their time used to fill out the questionnaire. Survey analysis results are presented in later sections of the report.

CHAPTER 2

EVOLUTION OF PUBLIC TRANSPORTATION IN PHILADELPHIA, PA.

I. INTRODUCTION

The history of public transportation operation in Philadelphia is a study of a number of small businesses and entrepreneurs. These were entrepreneurs in the public transportation business who identified markets for their services which had not up to the time been tapped. Most of these entrepreneurs began with little capital investment and had to sustain their businesses in the midst of unfavorable economic and institutional constraints bent on their demise.

The history of public transportation in Philadelphia in the context of entrepreneurial services is presented.

II. THE EARLY YEARS

Philadelphia's development from a compact little city to a bustling metropolis needed the gradual development of a variety of public transportation facilities at an early date. Prior to the development of planned urban transportation

facility, there were only a few dirt roads to depend on such as Darby Road and Old York Road.

Within city limits the so-called streets were nothing more than dirt roads also(3). The first adequate public means of urban travel was supplied by Joseph Boxall in 1831(4). Boxall established a stage coach line on lower Chestnut Street with an hourly schedule notoriously called "Boxall Accommodation". Edward DeChamps in July 1883 followed suit and started an additional line to provide service between the Navy Yard and Kensington Avenue via Second Street and Beach Street.

The need for some better mode of transportation became a pressing issue. The first locomotive made at Baldwin works in Philadelphia "Old Ironside", was placed on the Philadelphia and Germantown railroad on November 23, 1832(5). Steam transportation had come to stay.

The Philadelphia and Germantown railroad (by passage of the act of April 15, 1845 by assembly) became incorporated as the Schuykill Railroad Company and subsequently in 1854 became the Philadelphia and Delaware company, providing service between Philadelphia, Pennsylvania Wilmington, Delaware and Baltimore, Maryland.

In April of 1855 by another act of assembly the Philadelphia and Delaware railroad company became the Frankford and Southwalk Philadelphia City Passenger Railroad Company a fore-runner to many traction and motor companies that were incorporated to serve Philadelphia(6).

For a while the rail services were banned from operations on Sundays. Church ministers complained that the noise from the engines interrupted Sunday worship; but a State Supreme court decision held that operation on the sabbath was not a breach of peace.

Around 1893 cable cars began to be used successfully in some cities and Philadelphia decided to experiment with it. The city legislators passed an act permitting the use of cable cars in April 1883 and in 1892 a line was opened along Columbia Avenue(7). The system was used for ten years, then replaced by the electric trolley.

In 1888 Frank J. Sprague developed in Richmond, Virginia a successful electric street car system and again Philadelphia was eager to try this innovation. The Philadelphia Traction Company decided to use the new technology and on December 15,

1892 the first of such railways in Philadelphia began operation(8). On January 15 1897 the last horse driven cars were pulled out of operation marking the end of the antiquated era of public transportation for Philadelphia.

III. THE NEW ERA

The rapid growth of the city demanded a speedier means of transportation. In 1901 the state legislature enacted legislation to establish such a system (i.e. subway, high speed systems etc.)(9). The Market Frankford Elevated Highspeed Line became a reality six years later and in 1902 the Philadelphia Rapid Transit Company (PRTC) company was incorporated taking over all other transit companies in Philadelphia with these absorbed companies acting as "underliers" a name they are still known by(10).

IV. THE EMERGENCE OF PRTC

With the formation of the PRTC the traditional transit services in Philadelphia became unified into a single large system. In 1923 the PRTC first double decked bus began operation along Erie Avenue between Broad Street and Frankford Avenue. Trackless trolley coaches began operation in 1923 along Passyunk Avenue(11). The Broad Street Subway was built by the city and leased to the PRTC and began operations in 1928 under Broad Street from Olney Avenue to Market Street(12).

In 1937 the PRTC operated 2150 Trolley cars, 303 buses, 463 Subway and Elevated Cars and 8 trackless trolley coaches(13). In 1936 the system had a gross operating revenue of about $35,000,000.00. In addition to the fixed route services, PRTC also operated about 930 taxi cabs until February 1937 when the cabs holdings were sold to another cab company which later became Yellow cab.

PRTC continued to function as the sole public transit entity in Philadelphia until it was replaced in 1968 by the Southeastern Pennsylvania Transportation Authority (SEPTA) which expanded its operation into the four outlying and neighboring counties of Bucks, Chester, Delaware & Montgomery. It was apparently around the 1930's and early 1940's(14) (during the depression and second world war) that individuals with private automobiles, who found themselves out of work, began transporting passengers for a negotiated fare simulating the Jitney System that existed in Atlantic City, New Jersey and thus the birth of the hack operation as a public transit complement, occurred in Philadelphia.

CHAPTER 3

LITERATURE REVIEW

I. CURRENT STATUS

Hacks operating in Philadelphia should typically come under the jurisdiction of the Pennsylvania Utility Commission with state and local police organizations acting as enforcers of state and local laws. In Philadelphia, the principal constraint to legally operating a hack is inflexible regulations that prohibit or make it virtually impossible for an aspiring operator to obtain a legal permit to have his hack operation legalized.

Licenses and permits are limited to 1600 cabs in 1989 to a maximum of 2000 cabs by 1994(15). Today (1995) there are 2032 cabs operating in Philadelphia(16). In the beginning, urban transportation in Philadelphia was characterized by a loose conglomeration of several transport services with little to no coordination between the various segments. A monopoly developed as a result of the consolidation of these scattered transport companies, and these monopolies have had their positions protected by franchise(17); therefore there are some

therefore there are some cab companies and other transit interests who are not in favor of additional issuance of licenses or permits to new operators.

II. PARATRANSIT/JITNEYS IN THE UNITED STATES

Numerous studies have been conducted on paratransits both inside and outside the United States. Kirby et al studied operation of the San Francisco mission street and Atlantic City jitneys. They also studied jitneys and other paratransits modes in Chicago, New York etc.

Kirby et al concluded that jitneys and other paratransits studied, were infact viable public transportation complements and that this transportation mode should be encouraged by the government. Additional studies were also conducted on the Chicago's "King drive jitney". A conclusion drawn by Kirby et al was that jitneys and similar paratransits options can operate profitably provided they operate in selective demand environment; for example,

1. low income areas that are inadequately served by buses and taxis; and
2. tourist resorts such as Atlantic City.

III. PARATRANSIT/JITNEYS OUTSIDE THE UNITED STATES

Kirby et al also studied paratransits and jitneys in Mexico, France, Puerto Rico among others. The experience from overseas, although from countries with different economic conditions than those in the United States, suggest that paratransits might be useful in playing a role in urban transportation. But what Kirby et al failed to point out is that much of the experience with jitneys overseas are in countries with much different urban transportation demand and supply situation, it is therefore questionable as to its relevance when applied to the United States, a nation with very high degree of private automobile ownership.

Table I (Appendix) summarizes some of the characteristics of some of the better known foreign paratransits systems. Paratransits and similar services as illustrated in Table I are known to exist in other South American, Middle Eastern, African and Asian cities.

One point of significance that can be drawn from the foreign jitneys experience is that, jitneys and other similar paratransits continue to disappear in the United States largely because of political, labor and other conventional transit interests. In most cities of the world, jitneys tend to flourish in conjunction with conventional transit systems. In other words they coexist in these cities.

IV. HACKS COMPARED TO JITNEYS

One of, if not the major difference between hacks and the aforementioned transit systems (both domestic and foreign), is that these foreign transits are legal, semi-legal, and/or the authority show a high degree of tolerance for their operation. Thereby allowing them sufficient latitudes to operate their service.

As a direct consequence, it is easier to conduct in-depth studies on these systems to determine their characteristics, their performance measures and indicators. Hacks, on the other hand operate more as an illegal underground and clandestine transit mode in Philadelphia, thereby increasing the level of difficulty in evaluating and estimating performance level at high degree of confidence. This study strives to evaluate hack operations and functional characteristics.

CHAPTER 4

REGULATORY REQUIREMENTS

I. REQUIRED TAXIS ZONE

The Philadelphia city area is divided into three taxicab service zones, zones A, B and C(18).

1. Zone A: Beginning at the intersection of the Schuykill Expressway and City Line Avenue South, and East along the Schuykill Expressway to its intersection with Girard Avenue, West on 34th Street to its intersection with South Street, then East on South Street to the Delaware River, continuing along the Delaware River to its intersection with the Schuykill River, thence North along the Schuykill River to Penrose Avenue, thence South on Penrose Avenue to Interstate 95, thence along I-95 to its intersection with Lindberg Boulevard, thence North on Lindberg Boulevard to its intersection with Cobbs Creek Parkway, thence along Cobbs

Creek Parkway to it intersection with City Line Avenue, and thence North on City Line Avenue and back to its place of beginning.

2. Zone B: Beginning at the intersection of Front and Spring Garden Streets, thence West on Spring Garden Street, and on to the Schuykill River, thence North along the Schuykill River to the city boundary, continuing along the city boundary to its intersection with Front Street, thence South on Front Street to the place of beginning.

3. Zone C: All portions of Philadelphia which lies east of Front Street as it extends from Spring Garden Street to Cheltenham Avenue and West of Delaware River from Spring Garden Street, North to the city boundary.

Taxis operating in a designated service zone are required to provide 40% of their total service within the dedicated zone. Additionally, operators who do not operate an average

of 50% or more of the time within designated zone over a 3 month period are liable to revocation of their permit.

A requirement of state law for regulating public transportation, is that an application for a certificate of convenience to operate such a service be made with the public utility commission. The approval and subsequent issuance of such certificate is predicated upon the applicant demonstrating convincingly to the utility commission that there is (in fact):

1. a need for such a service; and

2. that he (the applicant) is capable of fulfilling that need(19).

Transfer of certificate to second party is not permitted except at the discretion of the commission. State statues also requires that all operators of such services shall utilize a centralized radio dispatch system, and that prior to the operation of such common carrier, it shall be inspected under the supervision of a State Police Officer. State laws also provide that no vehicle which is more that five years old shall continue to operate as a taxicab. Vehicles which are operated

in violation of these statues are subject to confiscation and impoundment and its operator guilty of a summary offense in the first instant and a third degree misdemeanor consecutively thereafter.

II. HACKS SERVICE PATTERNS vs REGULATORY ENVIRONMENT

Hacks should be considered to be a common carrier - a public utility - although some operators argue that in as much as they cannot exercise the right of eminent domain they are not common carrier within the meaning of the law. In order to operate a service which is of public interest such a service must submit to some degree of control by the public(20). The service provided by hacks in Philadelphia is of public interest but such service is, at best, not yet being regulated, nor to no degree controlled by the public.

Hacks operate out of spots and locations selected by the operator as lucrative locations, giving minor considerations to congestion and over crowdedness. The need to reduce and control over crowdedness and congestion at certain locations also seems to threaten hacks' service. At the Broad/Olney Streets and the Fifty Second/Market Streets intermodal transfer

points (two of the busiest intermodal transfer points in Philadelphia also chosen for this study), the demand for parking is very high. It is therefore not uncommon to observe a hack double parked while awaiting a fare, in violation of city's traffic regulations. The attention of the city police and other responsible city personnel are drawn to this behavior by the hack operator who in turn will issue the operator a warrant for the violation or may specifically request that the operator refrain from using the site as a terminal point for hack operation, or both.

Hacks incur substantial deadhead time (en-route to their selected terminal after making a run) because they are not distinctly marked nor easily identifiable and they do not operate under a radio dispatch system. In an attempt to compensate for deadhead operations, many operators make multiple passengers pick ups (ride share) who may all have varied destination, causing the operator to make route deviation thereby penalizing some riders by lengthening their travel time and increasing the uncertainty of arriving on time at their destination(21).

Hacks conformance to states and regulatory agencies rules can at best be described as non-existent and since hacks are

not easily recognizable, the ability of city official to enforce these rules is increasingly difficult(22).

Hacks also provide charter services - an exclusive service rendered to one or more persons with a common destination and the fare to be paid is a predetermined one between the operator and the user(s). For example, during the survey the author noted instances where operators had prearranged agreements to pick-up clients children to and from school for an agreed amount. Charter services are also operated under the taxi modes, in which case the fare may be charged on an hourly basis.

III. FINANCIAL AND SAFETY RESPONSIBILITY

Financial responsibility is meant to require adequate insurance to compensate victims of an accident for personal or physical damage and/or injury. This is commonly regulated by specifying minimum limits of insurance coverage. To operate public transportation as common carrier transporting 16 or less persons states statutes requires liability insurance of not less than $35,000.00 for bodily injury, death or property damage.

During the survey, some hacks operators appeared not to

meet this requirement for liability and bluntly would not discuss insurance issues. The fact that they operate personal vehicles as public transportation, the hack operator may have met the insurance requirement. Acquiring insurance for motor vehicles in Pennsylvania is not an option left to the operator or owner of the vehicle, instead state law requires all vehicle be insured. Income tax is also evaded by hack operators since they are an illegal entity and difficult to monitor. On the other hand state laws require all operators of common carrier transport to file a tax form with the commission showing gross intrastate operating revenue for the preceding year.

Safety requirements are related to the physical and operating condition of the vehicle and driver. Vehicle used as common carrier are required to pass periodic inspection; the vehicle may also be required to have certain specific features (i.e. number of doors, warning lights etc.)(23). The operator may be required to obtain a chauffeur class license, to show evidence of good conduct and to have an acceptable driving record. None of these conditions are being met by hacks in a timely fashion and as a requirement for operating public transportation.

CHAPTER 5

THE STUDY AREA

I. INTRODUCTION

The success and viability of the Hack System to a large extent depends on the conditions of the area within which they operate. There must be a need or a demand for the service to have the service utilized. The conditions that are conducive for the operation of hacks service may be defined in terms of population composition, the community's economic characteristic, the land use pattern, the residential densities and travel pattern.

This chapter presents a profile of hacks' service area so that one can discern and further comprehend these conditions. The four most utilized sites or terminals for hacks in Philadelphia were selected for this study:

1. Superfresh food shopping center at Wayne and Chelten Avenues in the Northwestern or Germantown section of Philadelphia,

2. Thriftway food market in the Logan section of

Philadelphia at Broad Street and Stenton avenue.

3. Olney Station the final stop on the Broad Street Subway Line - an intermodal transfer point, and

4. Fifty second street station on the Market/Frankford elevated Rail Rapid Station at 52nd and Market. This is also an intermodal transfer point.

The central business district (CBD) is not included in the study since very few hacks operate out of the CBD. There are, however, some hack trips that have their end-points in the CBD, but these are few.

II. LAND USE

INDUSTRIAL LAND USE

The Metropolitan Statistical Area (MSA) consists of Bucks, Montgomery, Chester, Delaware and Philadelphia counties which all contains at varying degree a variety of industrial complexes. These complexes (among other things) serve as trip generators for a variety of public transportation services. The scope of this study will not allow for a detail discussion of industrial land use in the MSA, but a description of the Primary Metropolitan Statistical Area (PMSA), of Philadelphia, a 136 Sq. mile area, will be given.

Since the early 1970's there has been a continual decline in industrial land use in Philadelphia PMSA. This can be attributed to the general relocation of plants and factories to suburban and other sites where large parcels of land are available and provide for needed expansion at lower cost. Over the past years there has been an increase in wholesale and warehouse facilities within the city limits because of considerable amount of residence being abandoned and converted into these facilities(24).

COMMERCIAL LAND USE

Commercial activities in Philadelphia has always been a mainstay. There are commercial institutions throughout the

city (i.e. banks, malls and mini-malls, galleries etc). The highest concentration of commercial development is the CBD, but Philadelphia being a city of neighborhoods has commercially developed strips and areas servicing respective neighborhood. For example Chelten Avenue in the Germantown section is a vibrant and commercially developed strip. A Germantown resident can transact most of his/her business in Germantown itself without having to travel to the CBD. Fifty Second Street in West Philadelphia is similar to Chelten Avenue, and so is Broad Street which is a main thoroughfare in Philadelphia (about ten miles in length) from the southernmost to the northernmost points in the city. It is along this strip that two of the four sites selected for analysis, namely Olney Station and Thriftway Market at Broad and Stenton) are located.

RESIDENTIAL LAND USE

The (PMSA) has a population of 2,067,000 persons in 1990, occupying a 136 sq. mile area(25). The overall population density is 15,198 persons per sq. mile, although the residential population density is higher in selected portions of the city. In North, South and West Philadelphia there is a high concentration of single family dwelling but most of the

structures are old, and many dilapidated because the majority of the structures were built over 100 years ago. The population density in these areas appear to be much higher. Scattered throughout the city are multifamily low-income housing projects. Over crowding of residence in these areas is prevalent, and some residences are vacant because of their deteriorated condition. Many other structures are abandoned and vacant, and these have become a shelter and breeding ground for drugs and crime.

There are a few concept and proposals for the revitalization of selected areas of the city, especially North Philadelphia. This urban renewal concept is under review by the Philadelphia Chamber of Commerce and other concerned business establishments.

They have as a goal the revitalization and restoration of selected areas of Philadelphia by constructing or reconstructing more livable dwellings and other units in the neighborhood. To achieve this goal several thousand low-income residents will be displaced as their homes are destroyed or renovated.

There is also a general but genuine concern over forever

loosing their homes on part of many residents. How will the revitalization impact their ability to make future payments of rents and mortgages(26). Is the anticipated benefits comparable with the associated future costs?

OTHER LAND USE

Public and semi-public land uses are pretty extensive throughout the study area as evidenced by the number of parks, cemeteries, playgrounds, educational institutions etc. There is 8,700 acres Fairmount Park, one of the largest in the World, and numerous amount of cemeteries in the study area. University city (a subsection of West Philadelphia) consists of land occupied by Drexel University and the University of Pennsylvania and their respective academic units.

Temple and La Salle Universities are located in the North Philadelphia section whereas Spring Garden College and Textile University are in the Germantown/Mt. Airy section respectively. There are numerous amount of medical facilities spread throughout the study area.

III. DEMOGRAPHIC CHARACTERISTICS

The PMSA consists of 136 Sq. mile with 2.1 million

residents. Whites accounts for 56.10% of the population, blacks 39.53% and hispanics 4.06%. Philadelphia faces a problem that is not uncommon to most large cities in the United States, where the higher educated and affluent with higher income have fled the city for the suburb leaving behind generally low-income households. Most of those who remain tends to be less educated poor whites and blacks, and older persons who commonly live on fixed income.

As reflected in the United States Census Data, persons residing in the four neighboring counties to Philadelphia (Bucks, Chester, Montgomery and Delaware), have education and income levels higher than Philadelphia. In 1990 the percentage of High School Education for these four outlying areas is 74.8% compare to 54.3% for Philadelphia.

There is still significant difference when the comparison is made at the college level. The percentage for the neighboring counties in terms of college education was 22.17% and for Philadelphia, 11.1%. The study area compares unfavorable with the rest of the MSA in many other ways. The lower level of education associated with the PSMA adversely affect incomes of persons residing in the PMSA. These residents are more apt to have low incomes, be unemployed or

employed in more menial and service oriented jobs than their suburban counter-part.

The median annual household income for the four MSA counties is $21,570 compared to $13,169 for Philadelphia(27). The PSMA median household income is lower and it is understandable why more people are declared below the poverty level than the MSA. Close to 21% of people in Philadelphia proper are classified as having income below the poverty level compared to a median of 6.15% for the rest of the MSA. From these numbers it can be deduced that the study area includes a higher proportion of poor residents than nearby areas.

It is generally believed that poor and older people continue to reside within the study area because of their proximity to the downtown CBD and the ready availability of public transportation and low cost housing.

IV. TRANSPORTATION RESOURCES AND TRAVEL PATTERNS

The Southeastern Pennsylvania Transportation Authority (SEPTA) provides traditional public transportation service within the study area. Its fleet is composed of trains, trolley buses and regular buses which operate as short-haul

city transit, long-haul regional transit and suburban transit. There are two major subway lines - The Broad Street line which runs in a general north/south direction and the Market-Frankford elevated line which operates in the CBD as a subway and on elevated tracks outside the CBD. Both Lines traverse the CBD. The Market-Frankford Line crosses the CBD in a general east/west orientation.

The total average daily ridership on the SEPTA system is 665,708 daily trips (down from 732,000 trips in 1990) but there is recent concern over lost of ridership. For fiscal 1994 the system has experienced a 6% drop in total ridership on its lines(28).

The service provided by SEPTA is quite extensive throughout the study area. Service generally begins at 5:30 a.m. and continues through 3:30 a.m.. There are selected lines/services that function around the clock.

During the morning and evening peaks subways and buses operate at 5 and 10 minutes headway respectively and 15 and 20 minutes headway during the off-peak depending upon the section of the city, with demand and sometimes weather condition being the deciding factor.

Suburban and regional transit operates at 30 minutes headway during peak hours and up to 60 minutes headway during the off peak. These services are also provided on Saturdays and Sundays though they are less frequent than on weekdays. A reason commonly associated with the decline in ridership of SEPTA transit system is the cost to ride which has (for the past 5 years) consistently increased with the most recent increase being March 1990.

The basefare, which allows riders to utilize interline and intermodal transfer, increased from $1.25 to $1.90 per ride on the city short-haul transits(29). In November 1994 the cost for a pack of 5 tokens increased from $5.25 to $7.00. A single token is good for one ride with no interline nor intermodal transfer allowed.

Fares on regional and suburban lines are based on zonal travel, with zones beginning in the CBD and radially extending to the outermost suburban areas. The further away the travel zone is, the higher the fare. Transpasses can be bought on a weekly or monthly basis at a reduced price for intra city and iterzonal travels.

The inner city and short-haul transits which are used mostly by the urban poor, usually pay for themselves because

of heavy use, but revenues generated by the inner city services are frequently used to provide subsidy for the long-haul suburban lines that are little used and serve a higher income clientele(30). The suburban and regional lines achieve maximum load factor during the morning and afternoon peak hours, and operate at less than capacity during off-peak hours.

Complementing the traditional public transportation in Philadelphia are hacks, taxi, and other para transits modes. During the survey it was observed that most hacks users did not resent paying an extra dollar to utilize hacks service which provides service to one's door as opposed to SEPTA where passengers may alight several blocks away. This could be a contributing factor to the decline in SEPTA's ridership.

A proposal by SEPTA on November 1, 1990 to curtail service on the two major inner city lines (the Broad Street and Market Frankford Lines) to 12 midnight(31) will serve to increase the demand for other services namely, hacks, rideshare, van/car pooling thereby increasing their viability as complementary public transportation services.

CHAPTER 6

ORGANIZATION AND OPERATION OF HACKS

I. ORGANIZATION

Hacks operation in Philadelphia as public transportation is completely independent and has no affiliation with other public or private transportation companies. They operate freely out of informal terminals but require permission to operate on a private property such as the Superfresh and Thriftway food markets.

Hack operators on these premises must obtain prior approval from the management of these facilities, and acquire the consent of the headman of these sites(32). Hack operation in Philadelphia is poorly organized, non-unionized and not very well coordinated, but in a city of 2.1 million people with total vehicle registration of 530,524 vehicles, creativity and innovation reign among entrepreneurs, sometimes in a speculative manner.

There is no dispatching system for hack operation, and as a result hack operators must remain at a particular location until a walk-on passenger requests service. Because of the

lack of radio dispatch service hack must return to terminal (after a run) empty, absorbing substantial deadhead time and costs.

II. OPERATION

COST AND REVENUE

Because of the substantial deadheading involved with hack operations, one wonders therefore whether the benefit of operating this type of service is compatible with the associated cost. From the survey the average out of pocket cost to operate a hack vehicle is about $30.00 for a 12-hour day. This amount is spent mostly on fuel, and there is a constant threat that the fuel cost may increase due to instability in the persian gulf region, and most hack operators worry about the possibility of going out of business.

The average revenue intake per 12-hour day is $90.00 to $110.00. Besides fuel there are other costs such as maintenance, parts and insurance, some of which hack operators would not discuss. In spite of these costs most hack operators claim to be making a profit.

It is rather difficult to determine exactly how many hacks

are in operation in Philadelphia at a given time. This is due largely to their inherent illegal nature. Nevertheless, based upon several interviews with operators, and also observations of hacks "modus operandi" it will be reasonable to conclude that there are approximately three to four hundred vehicles operating as hacks throughout Philadelphia. Therefore it was decided to select 350 as the average number of hacks operating in Philadelphia for estimating the revenue intake of hacks on an annual basis as follows:

1. Number of hacks in operation in Philadelphia: H
2. Average daily revenue intake: D
3. Number of days hacks operate per year: Q (250 weekdays and 50 weekend days
4. Annual revenue intake: A

Therefore, the annual revenue intake of hack operations in Philadelphia for a single hack is estimated as follows:

$A = H * D * Q$ such that

$A = 1 * 100 * 300 = \$30,000.00$/yr per hack vehicle

Now, for 350 hacks,

$$A = 350 * 100 * 300 = \$10.5 \text{ million/yr}$$

State and local governments receive no tax revenue because hacks are considered by government as an illegal form of paratransit, but yet the government agencies do not enforce existing rules and regulation that deal with some one who illegally operates a private vehicle for public transportation.

III. VEHICLE OPERATION ANALYSIS

Hacks operating at the four sites chosen for analysis in this study have somewhat different operational patterns and they will be featured in the survey data analysis. Located at the Superfresh and Thriftway food markets the peak periods of hack operation occurred between 10a.m. and 3 p.m. on weekdays and between 2 p.m. and 6 p.m. on weekends. Almost all of these trips are shopping related. At Olney Station and 52nd Street sites, the peak periods occurred between 7 a.m. and 10 a.m. and 3:30 p.m. and 6:00 p.m. of weekdays indicating work related trips.

During the off-peak hours, some hacks continue to operate although some operators drop out to go to their respective jobs in industries. Only 35% of the total daily ridership of hacks took place during what is considered traditional peak period for conventional transit on weekdays which typically are from 6:30 am to 9:30 am and from 3:30 pm to 6:30 pm. A significant volume of hack ridership takes place outside of traditional peaks implying that hacks ridership is relatively more uniformly distributed throughout the day as compared to the ridership variation on traditional transit routes. Peak periods of operations as it relates to hack operations cannot

be defined or considered in terms of peak periods for conventional urban mass transit.

A substantial number of hack clientele are hourly workers and persons on public assistance . These hourly workers may work one of several shifts, which begins and/or ends during hours of hacks operation. Many cannot afford a taxi and depending on the time of day and season of the year, the time required to wait for conventional bus transit might be too long; thus hacks become the logical alternative since it costs a little more than a bus to ride, but less than a taxi.

Individuals on public assistance rely on hacks for trips to the welfare offices, and supermarkets in the late morning to early afternoon. These diverse periods of travel demand enable hack some operators who hold regular jobs, the opportunity to stagger their operations. In reality the number of hacks found offering service at a given time is directly related to the number of operators holding other jobs and the hours which they are employed.

IV. LEVEL OF RIDERSHIP

Determining how many people ride the hack service on a

given weekday is rather difficult primarily because the operation by its very nature is illegal and the vehicles are not clearly marked. Standard traffic surveys in which the vehicle and passengers are observed at selected sites throughout the city will require substantial time and manpower.

The author sampled 40 hacks and 200 passengers over a one month period. Drivers were asked to fill out survey forms showing how many passengers were carried by the operator over a 12 hour period. An average of 57 passengers were carried by an operator during the 12-hour period which is equivalent to 4.75 passengers per hour. Hacks also operate on weekends, but the level of ridership on these days is lower. The average number of passengers carried on weekends is 46 during 12-hours of operation. This is equivalent to 3.83 passengers per hour. The annual ridership served by a single hack operator is calculate as follows:

1. Assume that a single hack operates 300 days (Q) a year; (250 weekdays and 50 weekend days, Q1 and Q2 respectively)

2. Ridership for weekdays and weekend days are R1 and

R2 (in our case 57 and 46)

The total annual passengers for one hack only is:

$$P = (Q1 * R1) + Q2 * R2)$$

$$P = (250 * 57) + (50 * 46) = 16,550 \text{ passengers}$$

V. PROFILE OF A HACK OPERATOR

The survey data reveals that operators of hacks in Philadelphia consists of a cross section of individuals who are predominantly black with few hispanics. The majority (60 percent) of operators surveyed once worked a full time job, but currently was retired and operating hacks to supplement their income from retirement.

Twenty five percent of the operators consisted of people who were employed in industries part/full time and operates hacks for supplemental income. Fifteen percent of operators were involved in other activities such as attending school or currently unemployed, and they operated hacks as a primary source of income. Overall 56% of those surveyed operated hacks on a full time basis, that they did not have any other jobs. Hacks operators varies in age from early twenties to the upper

sixties. Sixty percent of hacks operators is married.

Indicative of the extend to which hack operation is ethnically diverse, the surveyed showed that foreign nationals were involved in the operation as well. There were two Liberians, three Nigerians and one Jamaican surveyed during the study.

Among younger operators there is a higher turnover rate than among the older operators. The younger operators tend to operate hacks for a limited time period (3,6,9 months), and then they would drop out only to return again at some future unspecified date. It is therefore difficult to determine the level of stability among younger operators.

The older drivers tend to remain for the long haul since most of them are retirees supplementing their income, and feel a sense of commitment to a clientele they have established over the years.

VI. HACKS USERS' CHARACTERISTICS

Who are the users of hacks services? Survey data indicates that the user usually like the following service characteristics:

1. First, rapid transportation from origin to

destination of trip;

2. second, a low and affordable fare; and

3. third, safety.

These apparent advantages of utilizing the hack system are amply supported by data yielded from the survey of hacks passengers. Of all preferences shown on the questionnaire, the overwhelming response (89%) of the passengers indicated their preference of hacks service because it is cheaper.

Eighty percent preferred hacks to buses because they are faster. Seventy eight percent (78%) of those surveyed liked the hack service because they perceive it as being safer than conventional mass transit. This assertion, however, is not supported by crime data released by SEPTA for 1990/91 when both major and minor crimes on SEPTA system were reportedly on the decline(34). Although SEPTA'S crime may be declining, but does a decline in the rate of crime suggest that the system is safe? Users of hacks surveyed for the study firmly believe that hacks are safer.

Majority of the riders surveyed were from households with income less than $10,000. Thirty eight percent more women than

men used the hack service and the majority of trips were shopping and work oriented. About 43% of all trips made were shopping trips and 36% were work related trips. The typical hack user based on the survey data is between the ages of 18 and 38, accounting for 79% of all users of the service. Seventy three percent of hacks users was found to possess a valid drivers license while 52% of them did not own a car. This suggest that most of the users are either dependent or captive riders of the hack system or other public transportation.

Nevertheless it does appear that hack operation has become a viable operation in the black neighborhoods of Philadelphia and is contributing to its economic and social cohesiveness. The survey reveals also that 84% of hacks users do not have to transfer to regular transit to complete their trip.

This is indicative of the flexibility of hacks and their ability to implement the concept of route deviation. Except for a few chartered trips, most hacks trips are intracity with an average trip length of about six miles. The travel time for each trip varied with the route and associated traffic congestion. From the survey an average travel time of about 20 minutes was estimated inspite route of deviation made by

some operators thereby increasing or decreasing travel time.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

I. CONCLUSION

Practically no major cities in the United States operates a profitable regional/urban transit system inspite of state and federal governments' subsidies. Conventional bus and rail transit is experiencing economic problems because of high operating costs, and decreasing ridership.

Large sections of urban areas are not being served or are being poorly served. This is because of an increase in transit operating costs as opposed to revenue intake, and many cities are either unable or unwilling to pay for large deficits.

Hacks are not part of the SEPTA System and are not considered legitimate public transportation. They are however, an example of innovative private enterprise, and they are not subsidized. Public transportation should be opened to the private sector to allow effective and efficient service, thereby becoming an area where private and public groups share responsibility in a coordinated manner.

It has been established that hacks move a substantial

number of people, but before they can be considered a viable form of public transportation, some changes in regulations must be made. Inflexible regulations currently prevent an aspiring hack operator from legally providing the service. Some regulations are desirable for control purposes, but they must allow operators sufficient profit making opportunities. Supporters of the service argue that hacks contribute to several types of benefits:

1. less traffic on urban streets by increasing vehicle occupancy rate which in turn yields a reduction in investment in parking facilities in high land cost areas;

2. creates savings in public funds that would had otherwise been invested in transit hardware and subsidies;

3. improve mobility for transit dependant in areas not adequately served by conventional transit;

4. and provide multiple levels of transit utilization in that hacks will serve as an intermediate mode between taxis and buses.

This study has shown that there is a limited understanding of hacks operation in Philadelphia. A better understanding of this transit mode would help bring some needed changes in

regulations and aid planners in conceptualizing an integrated transit system more effectively.

Hacks operation in comparison to other private sector provided public transportation, can at best be described as unorganized and very poorly coordinated. There is no hierarchy structure in the hack business. Some sites for hack terminals are general public property and operation is conducted on a first come, first to pick your spot basis. Other locations require prospective operators to request permission from the property owner before beginning operation.

This request can also be made through the "headman" who usually is the operator who has used this location the longest. The Superfresh supermarket and the Thriftway supermarket require that hack operators obtain permission prior to operating on their premises. Individual operator rely upon street wit and the ability to identify medium to high population density areas and observe pedestrians movements in the discretional service area in order to attract passengers. Hacks are taking in substantial revenues tax free and without government intervention. If government could relax its regulating requirements and assist hacks operation to become viable, government may experience an increase in revenue

because of taxes levied on hacks.

The intervention of government into hacks operation will also improve the safety standards of hacks by directly requiring hacks to subscribe to a set of safety standards set by the government. Hacks are currently transporting thousands of passengers annually without being subjected to any government safety standards.

II. RECOMMENDATIONS

This study has shown that individual utilizing their privately own vehicles can provide a viable form of urban transportation in Philadelphia. The hack operators are fulfilling transit needs that are not being adequately met by conventional transit. Government should liberalize some regulatory requirements thereby creating windows of opportunity for paratransit entrepreneur to explore this transit mode while at the same time staying clear of all forms of subsidy.

The following recommendations present some key issues that should be addressed for accommodating hacks as a low cost paratransit service to complement traditional public transportation in Philadelphia:

1. Public Agencies should consider the development

of hacks in Philadelphia before investing heavily in other paratransit modes.

2. An appropriate public agency should work with hack operators in a limited way, in planning and developing hacks service. Planners can give advice on organization, fare structure, and operating costs, both fixed and variable costs.

3. Government agencies must develop guidelines that local agencies can follow in developing hacks as a viable and cost effective urban transportation offering a high level of service. These guidelines must however take into account the profit incentives of hacks as a private enterprise.

4. Government involvement must remain at a low level focussing on safety and/or security aspects. Private operators must make their own decisions regarding the operation of hacks service and they must bear the economic consequences of providing the service.

5. The department of health and human services should consider utilizing the hack operation to provide door-to-door service for the elderly and handicapped who reside in the service area. Fare coupons or tokens can facilitate this

program.

6. Hacks could be used as a feeder service for SEPTA. A cooperative fare program and use of transfer can be arranged.

7. SEPTA and City officials could consider a program to assist hack operators overcome the high cost of liability insurance by placing them into a public vehicle self insured program administered by the City.

8. The Federal Government should promote demonstration projects in other US cities. But his demonstration project should not be directly subsidized. Government should stay away from the operational aspects of hacks and any direct subsidy should be brief and directed to the user.

9. Direct Government economic assistance should take the form of planning and building hacks terminals and/or off-street stands.

10. Means to overcome organized labor's (i.e. taxis unions) objections to hack operation, should be found.

11. If or when the above recommendations are

implemented, government can then begin to share in the revenue intake of hack operators via taxation and/or other revenue sharing policies established by the government.

III. AVENUES FOR FURTHER RESEARCH

This study has discusssed the existing conditions surrounding hacks operations in Philadelphia as a public transit and has provided a basic understanding of hacks and its typical operational characteristics. By so doing, the author hopes that information contain in this text will serve as a tool for further evaluation and development of this innovative urban transit mode.

Further research should be conducted on the overall productivity of hacks as they relate to passenger/vehicle-mile, capacity, fuel consumption/vehicle-mile, etc..

The more engineers and planners become aware of this transit mode with all of its associated flexible attributes, the greater the chances will be of hack becoming a viable complement to public transportation, and Philadelphia will once again be recognized as the fabulous city of "Firsts".

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APPENDIX

TABLE A-I

CHARACTERISTICS OF FOREIGN JITNEYS

Place	Jitneys Name	# Per/veh	Competition	Veh. Type
Caracas Venezuala	por puestos	11	bus, taxi	6-seat sedan
Mexico City Mexico	peseros	6	bus, taxi subway	6-seat sedan
Israel	sherut	22	bus, taxi	8-seat auto
Beirut Lebanon	service	27	bus, taxi	6-seat sedan
Manila	jeepneys	11	bus, taxi	6-seat jeep

SOURCE: KIRBY et al study on Paratransit in the USA and Overseas, 1989.

TABLE A-II
DEMOGRAPHIC PROFILE OF (PSMA) STUDY AREA
PHILADELPHIA COUNTY
(PSMA)

AREA (1990)	136 sq.mi					
POPULATION (1990)	2,067,000					
POPULATION DENSITY	15,198 per sq. mi					
% POPULATION BY RACE:	WHITE	BLACK	HISPANIC			
	56.10	39.53	4.06			
% POPULATION:	< 5 YRS	5-17	18-24	25-44	45-64	>65
	6.4	19.5	13.3	25.2	21.5	14.1
YRS. OF SCHOOL COMPLETED:	> 12 YRS		> 16 YRS			
	54.3%		11.1%			
MEDIAN HOUSEHOLD INCOME:	$13,169 (1989)					
% OF PERSONS BELOW POVERTY LEVEL (1989):	20.65%					

SOURCE: (1990) UNITED STATES CENSUS DATA

TABLE A-III

DEMOGRAPHIC PROFILE OF MSA (EXCLUDING PHILADElPHIA)

	BUCKS	MONTGOMERY	CHESTER	DELAWARE
AREA (sq. mi.)	610	486	758	184
POP. (1990)	508,576	658,999	334,733	551,359
POP. DENSITY (persons/sq. mi.)	834	1356	442	2997
%POP. BY RACE:				
white	96.0	93.62	91.04	89.81
blacks	2.49	4.80	7.29	9.01
hispanics	1.19	0.84	1.81	0.76
YRS. OF SCHOOL COMPLETED: >12	74.70	75.80	76.40	72.30
>16	18.60	24.90	26.30	18.90
MEDIAN HOUSEHOLD INCOME	$22,016	$22,508	$22,206	$19,950
% PERSONS BELOW POVERTY LEVEL	5.8	4.7	6.4	7.4

DEMOGRAPHIC DATA FOR FIVE SURROUNDING COUNTIES NEAR PHILADELPHIA

SOURCE: UNITED STATES CENSUS TRACT DATA (1990)

TABLE A-IV

FREQUENCY DISTRIBUTION TABLE OF HACKS RIDERSHIP

TIME OF DAY (from - to)	* NO. OF PASSENGERS
6:30 am - 7:30am	10
7:30 - 8:30am	15
8:30 - 9:30am	15
9:30 - 10:30am	20
10:30 - 11:30am	25
11:30am - 12:30pm	30
12:30 - 1:30pm	10
1:30 - 2:30pm	15
2:30 - 3:30pm	20
4:30 - 5:30pm	20
5:30 - 6:30pm	15

Number of passengers surveyed, n = 200 passengers

TABLE A-V

HACKS PASSENGERS PROFILE

1. SEX

	MALE	FEMALE
NUMBER	62	138
PERCENT	31	69

2. ANNUAL INCOME LESS THAN $10,000

	YES	NO
NUMBER	152	48
PERCENT	76	24

3. AGE DISTRIBUTION:

	<18	18-28	28-38	38-48	48-58	>58
NUMBER	10	73	85	15	10	7
PERCENT	5	36.5	42.5	7.5	5	3.5

4. DO YOU HAVE A VALID DRIVER LICENSE?

	YES	NO
NUMBER	145	55
PERCENT	72.5	27.5

5. HOW MANY CARS DO YOU OWN?

	NO CAR	1 CAR	2 CARS	3 CARS	4 CARS
NUMBER	109	52	30	9	0
PERCENT	54.5	26	15	4.5	0

6. PURPOSE OF TRIP

	WORK	SHOP	SCHOOL	VISIT	OTHER
NUMBER	70	85	12	15	17
PERCENT	35.5	42.5	6	7.5	8.5

7. WILL YOU TRANSFER TO CITY TRANSIT TO COMPLETE YOUR TRIP

	YES	NO
NUMBER	33	167
PERCENT	16.5	82.5

TABLE A-VI
REASONS FOR USING HACKS

	Number	Percent
Is it the only available transportation?	80	40
Is it more accessible?	60	30
Is it cheaper?	178	89
Is it more reliable?	50	25
Is it faster?	160	80
Is it more comfortable?	100	50
Is it safer?	155	78
I know the operator	25	13
The operator gives me credit	34	17
It is difficult to carry packages on the bus	118	59
How would you have otherwise made this trip:		
By bus	150	75
By taxi	20	10
By trolley	20	10
By train	80	40
By walking	40	20
Wouldn't have made the trip	10	5

Nuuber of passengers surveyed, n = 200 passengers

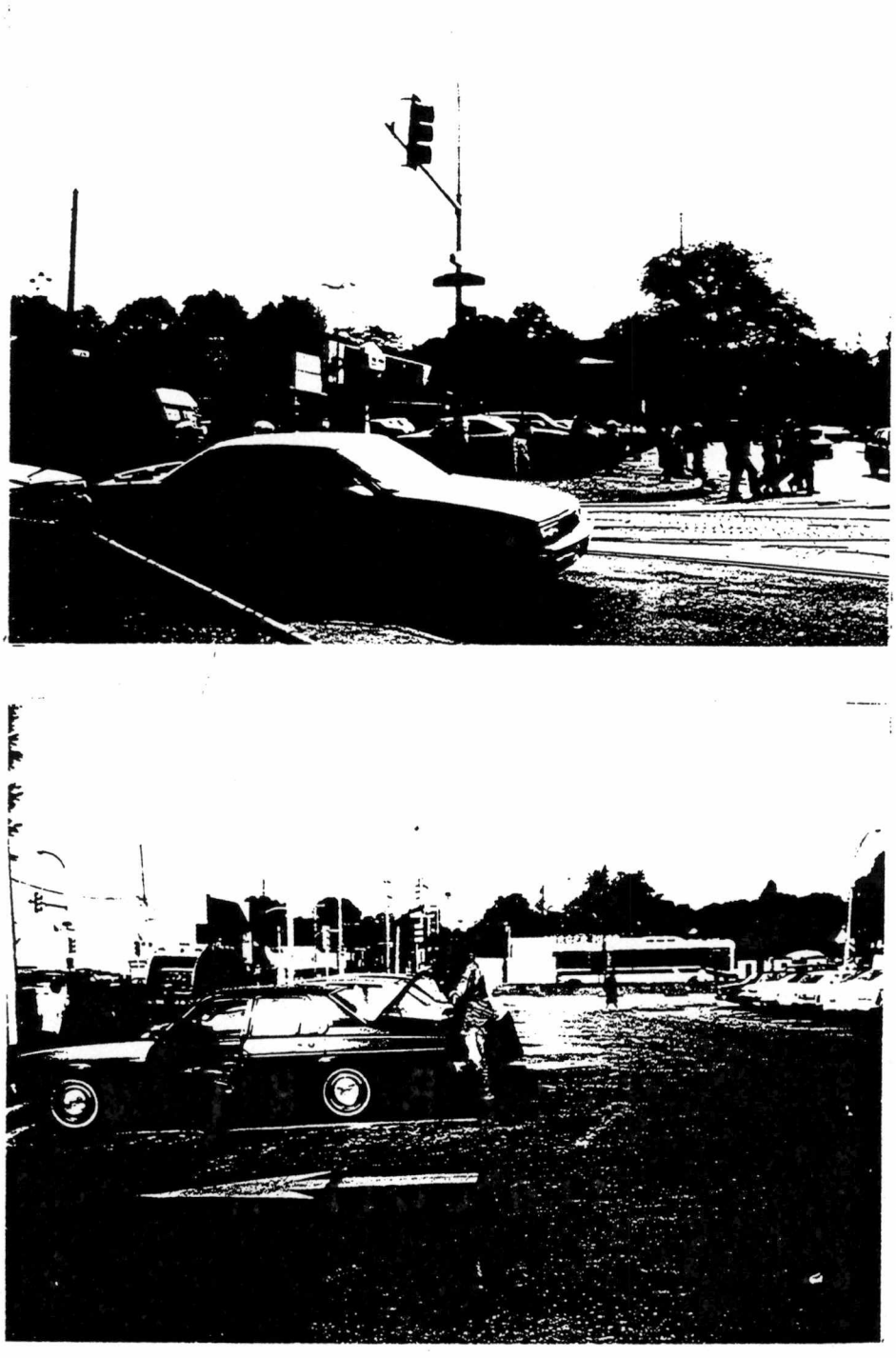


Fig. A-1.1 Operator makes passenger pick-up at superfresh market.



Fig. A-1.2 Hack vehicle awaiting passengers at broad and Olney

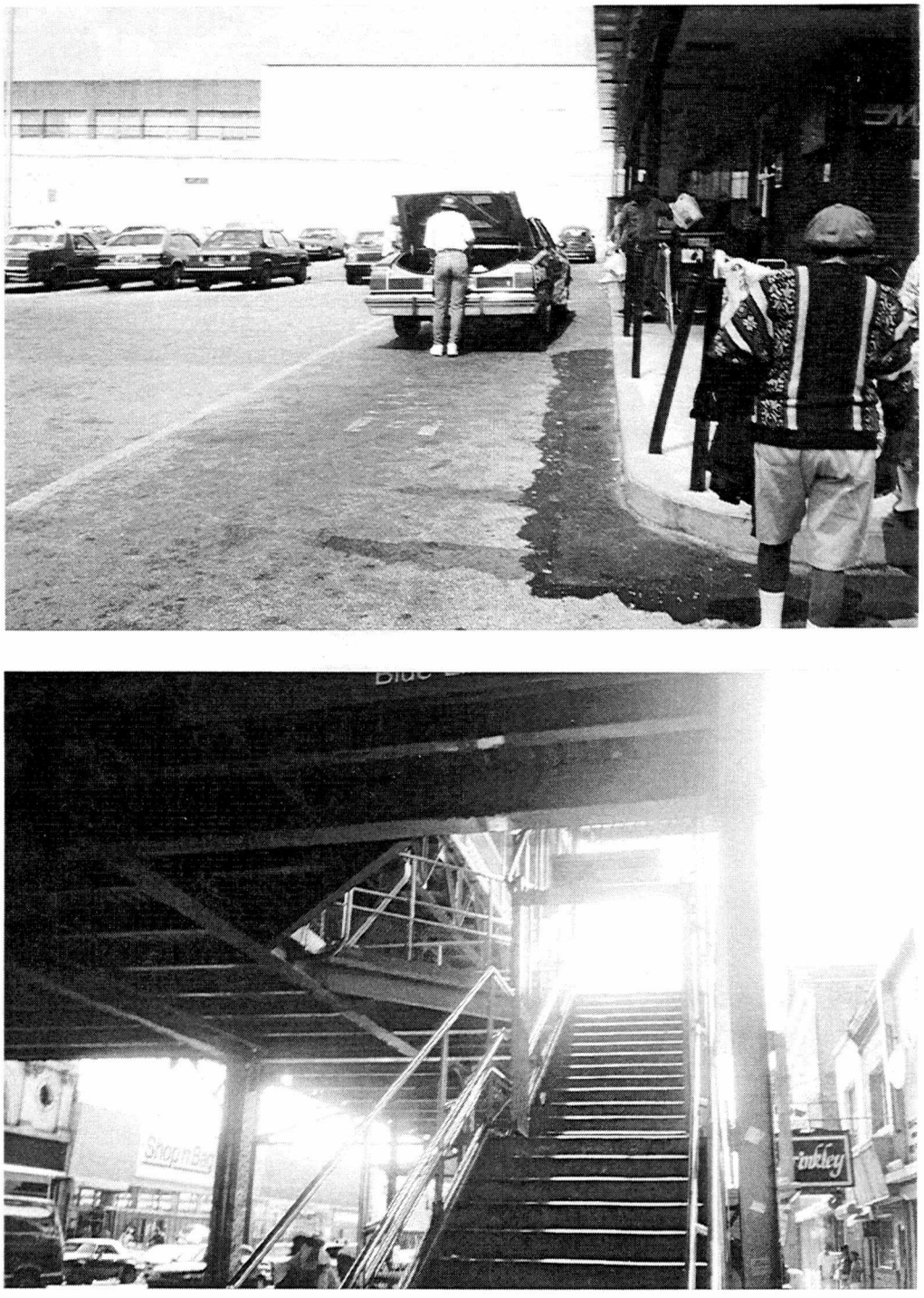


Fig. A-1.3 Fifty second and Market Streetssites

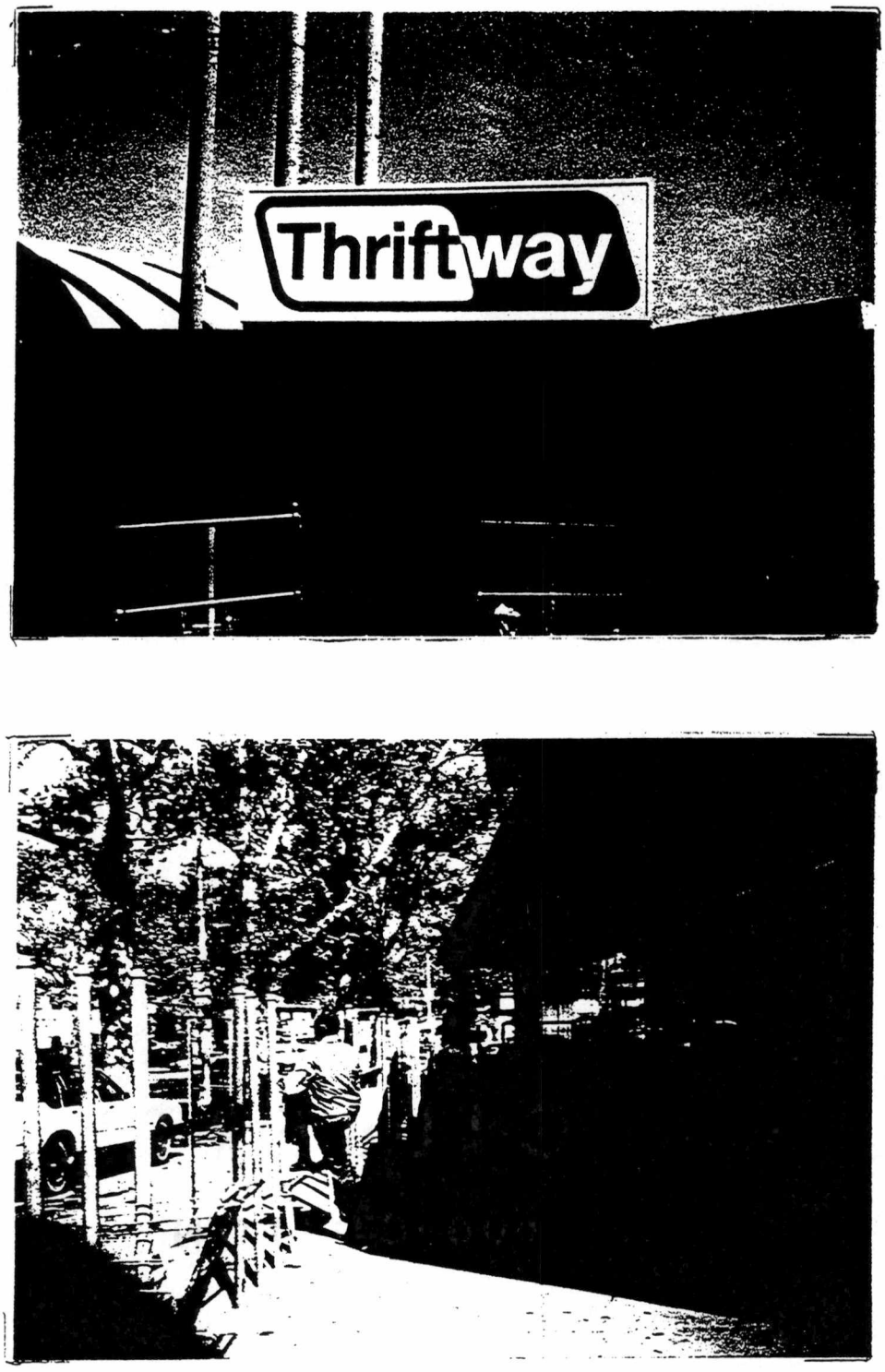


Fig. A-1.4 Operator awaiting passenger at Thriftway market

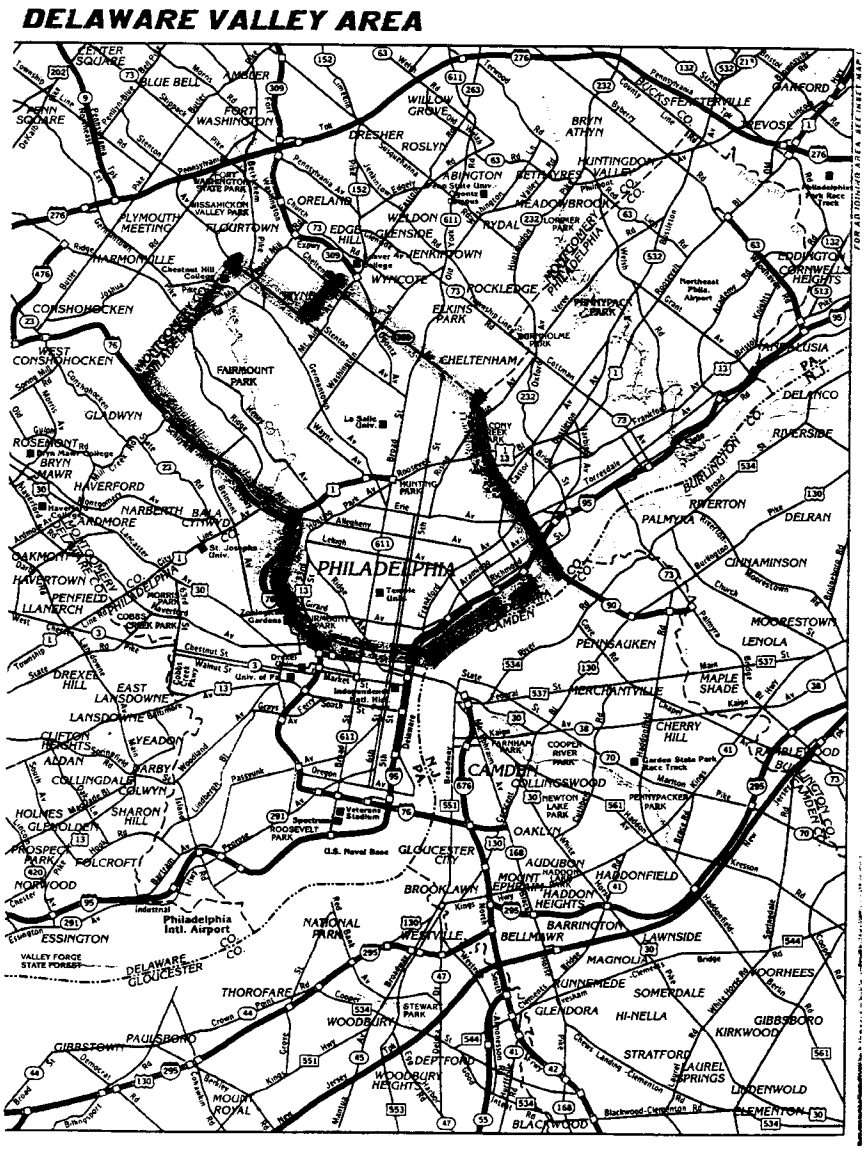


Fig. A-1.5 Philadelphia taxis zones

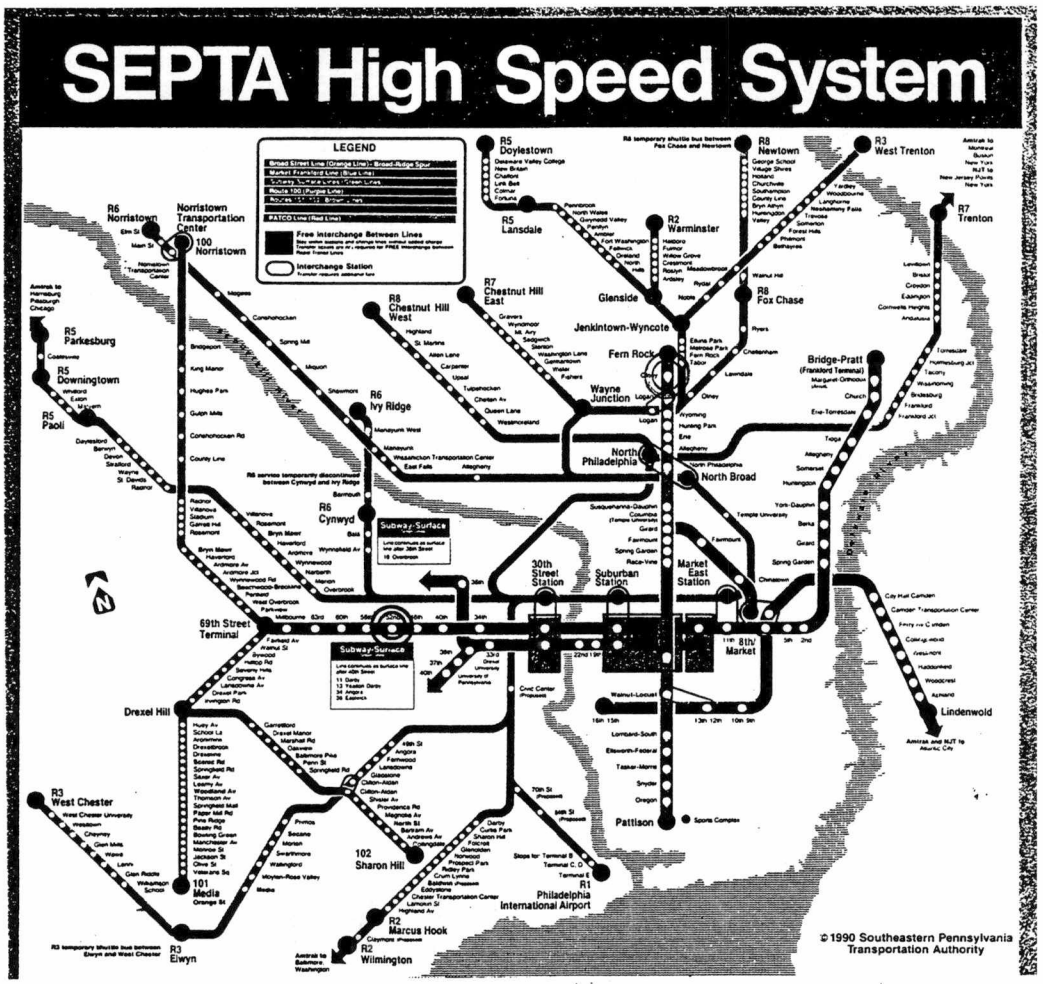


Fig. A-1.6 Study sites 1 and 2 on SEPTA's high speed lines

PUBLIC UTILITY COMMISSION

REPORT OF VEHICLE INSPECTION

Description of vehicle:

Make _____ Year _____

Model _____ Serial No. _____

Type: _____ _____

_____

License plate: No. _____ State _____

Owner's name _____

Name of authorized carrier _____

Indicate in the proper column the result of the inspection of each item listed:

Item	Not defective	Defective	Description of defect
Body			
Brakes			
Cooling system			
Drive line			
Emergency equipment			
Engine			
Exhaust			
Fuel system			
Glass			
Horn			
Leaks			
Lights (state which)			
Reflectors			
Speedometer			
Springs			
Steering			
Tires			
Wheels			
Windshield wiper			

Any other items requiring attention _____

_____

I hereby certify that on the _____ day of _____ I carefully inspected the equipment described above and that this is a true and correct report of the result of such inspection.

_____

(Signature of person making inspection)

I hereby certify that on the date stated above the person who made the inspection covered by this report was competent and qualified to make such inspection and was duly authorized to make such inspection as a representative of _____

_____

(Name of authorized carrier)

_____

(Signature of carrier, partner, officer, safety director, or other supervisory employe responsible for safety compliance)

Date _____

Fig. A-1.7 Pennsylvania vehicle inspection report form

SURVEY FORMS

1. Where are you going? Work School Shop Visit Other

2. Will you transfer to city transit to complete your trip?

   _____ yes _____ no

3. Sex _____ male _____ female

4. Do you have a valid driver's license?

   _____ yes _____ no

5. How many cars do you own?

   No car 1 car 2 cars 3 cars 4 cars or more

6. What is your age range?

   <18 18-28 28-38 38-48 48-58 >58

7. Your annual income is:

   <$10,000 $10-20k $20-30k $30-40k $40-50k >$50k

8. Why do you use hack service?

   a) Is it cheaper _____ yes _____ no

   b) Is it more accessible _____ yes _____ no

   c) Is it reliable _____ yes _____ no

   d) Is it safer _____ yes _____ no

   e) Is it more comfortable _____ yes _____ no

   f) Is it faster _____ yes _____ no

g) I know the operator _____ yes _____ no

h) The operator gives me credit _____ yes _____ no

i) Is it the only available transportation

_____ yes _____ no

j) Difficult carrying packages on the bus

_____ yes _____ no

9. How would you have otherwise made this trip?

a) By bus _____ yes _____ no

b) By taxi _____ yes _____ no

c) By trolley _____ yes _____ no

d) By train _____ yes _____ no

e) By driving _____ yes _____ no

f) By walking _____ yes _____ no

g) Would not have made the trip

_____ yes _____ no

VITA

Emmett Alston Taylor was born on November 22, 1952 in Arthington, Liberia to Beuford J. Taylor and Elnora Ammons-Taylor, a high school principal and housewife respectively at the time. Emmett pursued his secondary education at several institutions in Liberia because of job related relocation of his father.

He obtained a diploma in Buildings, Bridges and Railroad Construction from "l'école especiale du travaux publique" in 1978, Paris, France. He then migrated to the United States and in 1982 obtained an Associate Degree in Architectural Engineering from the Pennsylvania Institute of Technology. Emmett then matriculated to Spring Garden College in Philadelphia, Pennsylvania where he obtained the Bachelor of Science Degree in Civil Engineering.

After graduating with his Bachelor Degree, Emmett worked for the Pennsylvania Department of Transportation and later, for the Philadelphia Transit Consultant Company in Philadelphia. Still in search of higher education, Emmett

enrolled at the University of Tennessee for further studies where he completed the Master of Science degree in Civil Engineering. Now a United States Citizen he presently works for CMC Engineering in Valley Forge, Pennsylvania.

Emmett is a devoted husband and father. Married to Josephine Gilman for over fifteen years with five wonderful children-- Boika(Lorenzo), Tonia(Horatio), Klade-Maima (Shyvonne), Boimah (Emmett jr.) and Bindu (Elnora)-Taylors.