Exploring New Frontiers: Proceedings of Symposium II on African-American Mobility Mobility Issues

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# PROCEEDINGS OF SYMPOSIUM II ON

## AFRICAN-AMERICAN MOBILITY ISSUES

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Acknowledgments

This symposium was sponsored by Center for Urban Transportation Research (CUTR), the Conference of Minority Transportation Officials (COMTO), the Florida Department of Transportation (FDOT), and the U.S. Department of Transportation, Federal Highway Administration (FHWA).

The symposium team members were:
- Fredalyn M. Frasier, Research Associate, CUTR
- Eric T. Hill, Research Associate, CUTR
- Beverly G. Ward, Deputy Director for Operations, CUTR

The following Steering Committee Members provided guidance and had an active role in making the symposium a success:
- The Honorable James Hargrett, Co-Chairperson, Florida Senate
- The Honorable Arthur Kennedy, Co-Chairperson, Florida Transportation Commission
- Mr. Michael Blaylock, Director of Mass Transportation, Jacksonville Transportation Authority
- Dr. Frank Enty, Senior Staff Advisor, Mass Transit Administration of Maryland
- Mr. Marion Hart, Public Transit Office Manager, Florida Department of Transportation
- The Honorable Gloria Jeff, Associate Administrator for Policy, Federal Highway Administration
- Dr. Sylvan C. Jolibois, Jr., Florida International University
- Mr. Frank Martin, Deputy Director of Rail Operations, Metro-Dade Transit Agency
- Mr. Bill McCloud, General Manager & Senior Vice President, ATC/VANCOM
- Dr. Charles A. Wright, P.E., Professor of Engineering Technology, Florida Agricultural and Mechanical University

Developing the symposium required significant technical assistance from CUTR staff members, and local private and public service providers, both during and afterwards. These individuals were:
- Gary Brosch, Director, CUTR
- Steve Polzin, Deputy Director for Policy Analysis, CUTR
- Efrain Areizaga, Student Research Assistant, CUTR
- W. Joseph Balderson, Senior Clerk, CUTR
- Patricia Baptiste, Senior Secretary, CUTR
- Maria Berlin, Berlin Designs
- Cecil Bond, Southeastern Pennsylvania Transportation Authority (SEPTA)
- Sharon Dent and the Staff of the Hillsborough Area Regional Transit Authority (HARTline)
- Muzi Dlamini, Student Research Assistant, CUTR
- Yvette Fuller, Student Research Assistant, CUTR
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- Julé Green, Program Assistant, CUTR
- Joseph D. Hagge, Research Associate, CUTR
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- Tonya Hepburn, Student Research Assistant, CUTR
- Gwen Hollis, Senior Secretary, CUTR
- Pamela LaPaugh, Clerk, CUTR
- The Staff of the Museum of African American Art, Tampa, Florida
- Susan Pearson, Tampa Marriott Hotels
- Sherry Perry, Student Research Assistant, CUTR
Summary

The Center for Urban Transportation Research, in cooperation with the Florida Department of Transportation (CUTR), convened its first national symposium on African-American mobility issues in March 1994. Building on the discussions and experiences of the first symposium, the second symposium, convened April 5 through 7, 1995, continued the objective of inclusion of the transportation issues relevant to the African-American community. The second symposium held particular significance because of the 1997 scheduled reauthorization of the federal transportation bill. Although reauthorization was not scheduled for another two years, the need existed to strengthen the existing legislation and frame policies to address its shortcomings. The planned topics also seemed to hold significance for policymakers with regard to other minority groups, protected classes, and special populations.

As a multifaceted, multidisciplinary industry, transportation commands the attention of a wide spectrum of professionals. The symposium topics had broad appeal and generated information particularly valuable to transit operators, engineers, planners, equal opportunity specialists, government officials, economists, and transportation policy-makers. Topics that addressed in the plenary sessions included:

- Equal access and mobility: the continuing evolution of policies related to highway and transit funding;
- Emerging technologies and the implications of their impact on the African-American community;
- Entrepreneurs and contracting opportunities within the transportation industry;
- Applied research findings as related African-American travel behavior.

The symposium was attended by more than 80 participants from throughout the United States. The administrators of the U.S. Department of Transportation, Federal Highway Administration and the Federal Transportation Administrations participated in the program along with professionals from across the United States and abroad. Representatives of state and local governments, transit agencies, academia, and the private sector were among the attendees.

At the end of the symposium, a survey of participants' impressions of the symposium was conducted. Participants stated that the symposium met or exceeded their expectations and that "the number and variety of speakers and panelists made the symposium a very worthwhile event." Participants also helped to draft an agenda for the third symposium planned to be held in spring 1996.
SYMPOSIUM II ON
AFRICAN-AMERICAN MOBILITY ISSUES
April 5 - 7, 1995
Tampa Marriott Westshore, Tampa, Florida

Agenda

Wednesday, April 5, 1995

1:00 p.m. ....................... Registration

1:30 p.m.-2:00 p.m. ........ Welcome Eric T. Hill, Research Associate, CUTR
Arthur W. Kennedy, Member,
CUTR Advisory Board & Florida Transportation Commission
Gary Brosch, Director, CUTR

2:00 p.m.-3:15 p.m. .......... Opening Session

Setting the Theme: Perspectives on African-American Mobility Issues

Overview: A discussion on how past and current policies and the current political environment impact the delivery of service and the transportation needs of the African-American community.

• "Perspectives on African-American Mobility Issues," Charles A. Wright, Ph.D., P.E., Professor of Engineering Technology, Florida Agricultural and Mechanical University (FAMU)

3:15 p.m.-3:30 p.m. ........ Break

3:30 p.m.-5:00 p.m. ....... The Continuing Evolution of Public Transportation Policy

Overview: This session examines the significant policy changes at the federal level including the Intermodal Surface Transportation Efficiency Act (ISTEA) and other federal legislation currently under consideration and the policy implications that planners and transportation providers must address to ensure the mobility of minority communities.

Moderator: Lorenzo Alexander, Public Transit Office Manager, Florida Department of Transportation, District Two

• "The Continuing Evolution of Public Transportation Policy," Wade Lawson, Director of Planning, South Jersey Transportation Authority

• "Creating an Equal Opportunity Transportation System," Angela Fogle, Transportation Planner III, Fairfax County Transportation, VA

○ Presentation appears in this volume
Agenda (Continued)

“Participation in the Metropolitan Planning Process,” A. Shaun Collins, Executive Director, Volusia County Metropolitan Planning Organization (MPO), Florida

“African-Americans and the Americans with Disabilities Act,” Rosalyn M. Simon, Ph. D., Director, Project ACTION

5:00 p.m.-7:00 p.m. ...... Reception Marriott Hotel

Thursday, April 6, 1995

8:00 a.m.-8:30 a.m. ....... Continental Breakfast

8:30 a.m.-10:00 a.m. ...... Greeting Fredalyn M. Frasier, Research Associate, CUTR

Emerging Technologies and Innovative Programs

Overview: This session presents unique approaches to addressing the transportation needs of minority communities through cultural marketing, citizen outreach, and applied research.

Moderator: Sylvan C. Jolibois, Jr., Ph.D., Assistant Professor of Transportation Engineering, Florida International University

☐ “Transportation Redefined,” Marianne Taylor Crate, Citizen Participation Coordinator, East-West Gateway Coordinating Council, St. Louis, Missouri

☐ “A Broad Human Factors Approach to ITS Technologies and Implications for African-Americans,” Jose H. Guerrier, Ph.D., Senior Research Scientist, Stein Gerontological Institute, Miami, Florida

10:00 a.m.-10:15 a.m. .... Break

10:15 a.m.-11:45 a.m. .... The Fare Equity Issue

Overview: This session addresses the potential cuts in federal funding to local transit systems and the impact of future fare restructuring strategies for transit systems and minority communities.

Moderator: Deborah Price, Chairperson, Conference on Minority Transportation Officials (COMTO)

“Civil Rights and Fare Equity,” Paul Sonn, Esq., NAACP Legal Defense Fund

“A Transportation Provider’s Dilemma,” Sharon Dent, Executive Director, Hillsborough Area Regional Transit

☐ Presentation appears in this volume
Agenda (Continued)

12:00 p.m.-2:00 p.m. ..... Luncheon

Introduction of the keynote speaker, Frank Martin, Assistant Director of Rail Operations, Metro-Dade Transit Agency, Florida

☐ Keynote Address, Gordon J. Linton, Administrator, Federal Transit Administration

2:00 p.m.-3:15 p.m. ..... Environmental Justice in Transportation

Overview: This session presents perspectives on the growing awareness of environmental justice in the transportation field and outlines activities designed to address the issue.

Moderator: Gloria Jeff, Associate Administrator for Policy, Federal Highway Administration (FHWA)

☐ “Environmental Justice in Transportation,” Lee Johnson, Senior Regional Manager, ATE Management and Service Company, Inc.

“Working in the Community,” Michelle DePass, Esq., Executive Director, New York City Environmental Justice Alliance

☐ “Georgia Transportation Alliance,” Lucius McDowell, Community Coordinator, Georgia Transportation Alliance

3:15 p.m.-3:30 p.m. ...... Break

3:30 p.m. ...................... Student Paper Award Presented by Dr. Frank Enty

Recipient: Satyakala Jarugumilli, University of Nevada, Las Vegas

3:45 p.m.-5:00 p.m. ..... Applied Research Findings

Overview: This session is designed to share findings on recent research in the area of minority travel behavior, ongoing research, and lessons learned.

Moderator: Frank Enty, Ph.D., Senior Staff Advisor, Mass Transit Administration of Maryland

“Research Opportunities,” Stephanie Nellons Robinson, Senior Program Officer, Transit Cooperative Research Program, Transportation Research Board (TRB)


☐ Presentation appears in this volume
Agenda (Continued)

5:00 p.m.-8:00 p.m. ....... Reception Tampa Museum of African-American Art

Transportation provided courtesy of
Hillsborough Area Regional Transit Authority (HARTline)

Friday, April 7, 1995

8:30 a.m.-9:00 a.m. ....... Continental Breakfast

9:00 a.m.-10:00 a.m. ...... Greeting Beverly G. Ward, Deputy Director for Operations, CUTR

State Perspectives on the Reauthorization Agenda

"ISTEA II," Bill McCloud, Senior Vice President, ATC/VANCOM

"The State Legislature and Transportation Policy," James T. Hargrett, Senator, State of Florida

10:15 a.m.-11:00 a.m. .... Closing Session

"Closing Remarks," Rodney E. Slater, Administrator, Federal Highway Administration (FHWA)

11:00 a.m. ................ Adjourn Beverly G. Ward, Deputy Director for Operations, CUTR
SYMPOSIUM II ON
AFRICAN-AMERICAN MOBILITY ISSUES

April 5 - 7, 1995
Tampa Marriott Westshore, Tampa, Florida

Speakers

Lorenzo Alexander is Public Transit Office Manager, Florida Department of Transportation, District Two, Lake City, Florida.

Fredalyn M. Frasier is a Research Associate at the Center for Urban Transportation Research at the University of South Florida.

Gary Brosch is Director of the Center for Urban Transportation Research at the University of South Florida in Tampa.

Jose H. Guerrier, Ph.D., is a Senior Research Scientist at the Stein Gerontological Institute in Miami.

A. Shawn Collins is Executive Director of the Volusia County Metropolitan Planning Organization in Daytona Beach, Florida.

James T. Hargrett is a member of the Florida State Senate representing District 21 of Tampa.

Marianne Taylor Crate is the Citizen Participation Coordinator of East-West Gateway Coordinating Council, St. Louis, Missouri.

Eric T. Hill is a Research Associate at the Center for Urban Transportation Research at the University of South Florida.

Sharon Dent is Executive Director of the Hillsborough Area Regional Transit Authority in Tampa.

Satyakala Jarugumilli was a Master’s student in the Department of Civil & Environmental Engineering and a research assistant at the Transportation Research Center, University of Nevada, Las Vegas. Ms. Jarugumilli is presently working as a transportation engineer for Rajappan & Meyer Consulting Engineers in San Jose, California.

Michelle DePass, Esq., is the Executive Director of the New York City Environmental Justice Alliance, New York, New York.

Gloria Jeff is Associate Administrator for Policy at the Federal Highway Administration in Washington, D.C.

Frank Enty, Ph.D., is a Senior Staff Advisor at the Mass Transit Administration of Maryland, Baltimore, Maryland.

Lee Johnson is Senior Regional Manager of ATE Management and Service Company, Inc., Cincinnati, Ohio.

Angela Fogle is a Transportation Planner III at Fairfax County Transportation, Fairfax, Virginia.

Fredalyn M. Frasier is a Research Associate at the Center for Urban Transportation Research at the University of South Florida.

Jose H. Guerrier, Ph.D., is a Senior Research Scientist at the Stein Gerontological Institute in Miami.

Eric T. Hill is a Research Associate at the Center for Urban Transportation Research at the University of South Florida.

Satyakala Jarugumilli was a Master’s student in the Department of Civil & Environmental Engineering and a research assistant at the Transportation Research Center, University of Nevada, Las Vegas. Ms. Jarugumilli is presently working as a transportation engineer for Rajappan & Meyer Consulting Engineers in San Jose, California.
Speakers (Continued)

Sylvan C. Jolibois, Jr., Ph.D., is an Assistant Professor of Transportation Engineering at Florida International University in Miami.

Arthur W. Kennedy is a Commissioner with the Florida Transportation Commission and a member of the Advisory Board of the Center for Urban Transportation Research.

Wade Lawson is Director of Planning at the South Jersey Transportation Authority, Atlantic City, New Jersey.

Gordon J. Linton is Administrator of the Federal Transit Administration in Washington, D.C.

Frank Martin is Assistant Director of Rail Operations at Metro-Dade Transit Agency in Miami.

Robert M. Martin, Jr., is a Research Associate at Florida Agricultural and Mechanical University in Tallahassee.

Bill McCloud is Senior Vice President of ATC/VANCOM in Oakbrook Terrace, Illinois.

Lucius McDowell is Community Coordinator at the Georgia Transportation Alliance, Atlanta, Georgia.

Deborah Price is Chairperson of the Conference on Minority Transportation Officials in Washington, D.C.

Stephanie Nellons Robinson is a Senior Program Officer for the Transit Cooperative Research Program of the Transportation Research Board in Washington, D.C.

Rosalyn M. Simon, Ph. D., is Director of ProjectACTION, Washington, D.C.

Rodney E. Slater is Administrator of the Federal Highway Administration in Washington, D.C.

Paul Sonn, Esq., is an attorney for NAACP Legal Defense Fund, New York, New York.

Beverly G. Ward is Deputy Director for Operations at the Center for Urban Transportation Research at the University of South Florida.

Charles A. Wright, Ph.D., P.E., is Director and Professor of Engineering Technology at Florida Agricultural and Mechanical University in Tallahassee.
Welcome
Gary L. Brosch
Director
Center for Urban Transportation Research

Good afternoon. My name is Gary Brosch. I am Director of the Center for Urban Transportation Research (CUTR). On behalf of the Florida Department of Transportation and CUTR, I welcome you to the second symposium on African-American Mobility Issues.

In March 1994, CUTR convened its first symposium on African-American mobility issues. It established the first forum in recent times to discuss the special transportation problems and needs of African-Americans. The agenda included:
- presentations on how past and current policies continue to define travel behavior and transportation needs;
- analyses of travel patterns and behavioral characteristics;
- case studies of jitney services and their roles in public transportation;
- contracting opportunities and marketing services; and
- an open panel discussion on ISTEA.

The symposium was attended by more than 60 participants from throughout the United States and the Caribbean. Representatives from the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), state and local governments, and transit agencies, academia, and the private sector were among the attendees.

A survey of participants' impressions of the symposium showed that participants believed it either met or exceeded their expectations and gave it an overall good rating. Participants also found the symposium to be "educational and informative" and that it should be repeated and expanded.

This year's symposium builds on the experiences and issues provided in 1994 and serves to continue the discourse on the special transportation needs in the African-American community. It also provides a forum to continue the exchange of ideas and information, and discussion of transportation planning, programming, and policy issues as they relate to the African-American population.

This year's symposium also is a collaborative effort between CUTR, University of South Florida (USF), FHWA, and the Conference on Black Public Administrators (COMTO). The keynote speaker during tomorrow's luncheon will be Gordon Linton, Administrator, FTA. On Friday, Rodney Slater, Administrator, FHWA will speak during the closing session.

The timeliness of this year's symposium is significant. Consider the following changes in society that will have a bearing on mobility in the African-American community.

The efforts by the new Republican Congress to reduce federal funding to local transit systems, which might include significant cuts in operating assistance;

Fare hikes also are becoming an important topic in the transit community. The recent controversy involving the Los Angeles County Metropolitan Transportation Authority's (MTA) efforts to increase fares may provide an indication of the importance of this issue;

Several policy and program changes at the federal level will have important impacts on the continued mobility of minority communities. What effect will the proposed National Highway System (NHS), which was approved by the House of Representatives by an overwhelming margin and is now.
before the Senate, have on Black communities?

Recent analysis of the Nationwide Personal Transportation Study (NPTS) reveals that trip rates for Blacks have increased faster than for non-Blacks. This analysis also showed that the number of Blacks becoming licensed to drive increased by 27.9 percent from 1983 to 1990, supporting an increasing demand for travel using privately owned vehicles. The increasing growth in travel by Blacks suggests needed funding for transit, roadway, and infrastructure improvements serving Black communities. Greater access to employment opportunities and services within the Black community, or from these communities to suburban locations, is needed in order for this community to prosper economically and socially.

A requirement of the Intermodal Transportation Efficiency Act of 1991 (ISTEA) mandates increased community participation in developing transportation systems. Thus, policy-makers and planners at the state and local levels and in metropolitan planning organizations need to give greater attention to travel demands of Blacks, since they represent a changing and increasing market. This growing market also supports the desire for increased diversity in the composition of decisionmakers in the transportation arena.

How will Blacks and other minorities in the transportation industry be affected by Congressional attempts to repeal Civil Rights legislation and affirmative action programs that prohibit discrimination? What should be the response from the minority community to these activities?

What are the impacts on minority communities from transportation facilities that pollute and disrupt neighborhoods? For example, many transit maintenance and operation facilities, such as garages and terminals, are found in minority neighborhoods. These cause adverse effects on the environment and quality of life for residents. Many Black communities also were disrupted, economically and socially by the development of the interstate highway program in the 1960s and 1970s.

Communication and technology improvements in society will have significant impacts on Blacks and minorities. How will products generated through Intelligent Transportation Systems (ITS) improve or hinder chances for low income and minority groups to prosper or be positioned in mainstream America?

The ISTEA legislation continues to offer opportunities for the inclusion of African-Americans in the transportation decisionmaking process. In economic terms, millions of jobs are still being created from transportation projects and transit continues to serve as a potential employer and a transportation service.

However, these opportunities are being threatened and will not last long. Therefore, it becomes more important to continue the discussion on the issues affecting mobility in African-American communities and to develop an agenda that will address the associated problems for this group.

We invite your input and comments so that the most efficient and equitable transportation system possible can be implemented. Please notice the evaluation form in the package that you received when you registered. At this time, I would like for everyone to complete the first question: "Before the symposium begins, please write a few sentences on what you hope to gain from this symposium." Thank you.
Introduction

To those who represent the state of Florida, Gary Brosch, Director of CUTR, the African-American Mobility Symposium Steering Committee, we thank you for being here and bringing those warm words of welcome. Eric, Beverly, and Fredalyn, I appreciate this fine opportunity that I have to work with Mr. Kennedy and the other presenters; particularly since Mr. Kennedy is involved in so many transportation activities and is also a renowned Sunday School superintendent. The superintendent’s superintendent. It is a pleasure to serve all of you at this important second symposium dealing with these important issues. Your theme is very challenging; it allows for strengthening of partnerships and networking. The theme is very diverse, futuristic, and will meet the needs of the 21st century — the next 100 years.

I am very pleased to see the diversity of individuals present. You represent the best that the transportation profession has to offer. You represent the commitment to African-American mobility issues. You are talented and committed.

We also have other administrators, like Mr. Rodney Slater, Mr. Gordon Linton and many others, such as Dr. Sylvan Jolibois, Mr. Frank Martin, Mr. Bill McCloud, and Ms. Sheron Bellamy, here who perform collateral mobility responsibilities within the community. All of us working in collaboration, networking, and partnering to make it happen.

Past Activities

It is true that we have had many accomplishments related to transportation and mobility of African-Americans, but it is also true that we have much work to do! To paraphrase Robert Frost, “We have traveled a long way, but we have miles to go . . .”

Please allow me to mention some conditions that place us here today and to talk about transportation in a different way. Clearly, we can talk about the importance of transportation as it relates to our economy, as it relates to our society, and as it relates to our quality of life. However, I also see it in another way. Transportation has been an integral part of the peopling of America because we are a nation of nations with a different agenda from other nations. Oceans and seas were crossed in search of freedom.

To use the words of Administrator Slater, “Transportation is freedom — personal, economic, social, and political — a means of happiness! We may talk about Lady Liberty that stands in the New York harbor and the message it connotes. ‘Send me your poor, your tired, your huddled masses, yearning to breathe free.’” However, the transportation route of African-Americans was not voluntary and our past has been wrought with many struggles that related to transportation. If we visit the forts, Elhaino Island, Ghana, and other holding facilities for slaves in West Africa, we can hear the voices of our ancestors.

As you know, most African-Americans were brought to this country as slaves more
It is important that the word be sent forth that African-Americans not only wish to be a part of the rewards of work, but that they also wish to be a part of the work itself."

than 375 years ago to Jamestown, Virginia. (There are theories of even before that time). Others came for freedom because they were chattels in their own country; being kings and queens, we came as chattel.

Past conditions dictated transportation behavior for African-Americans who remained in the rural southeast until specific events transpired:
- The Civil War;
- The Underground Railroad and Harriet Tubman;
- The various inventions: which made necessity truly the mother of invention such as the train hook, traffic light, and so on;
- After the War, Jim Crow;
- The Industrial Revolution;
- Southern segregation that led to Negro communities in the urban North;
- The cutting of single dwellings into multi-dwellings that led to heavy concentrations of African-Americans in these cities;
- After World War II, African-Americans were ready to trade tired souls for freedom, which was not really free.

As noted, our past and current policies continue to defy travel behavior and transportation needs in our communities. From this troubled past, which include battles of Homer Plessy to the Great Migration, it is situationally correct that transportation became the focal point: Rosa Parks — refusing one day to sit in the back of the bus. It further was fitting that the advent of a transportation event brought the Civil Rights movement from the back of pickup trucks to the halls of Congress with more than 300 years of history and that has brought us to today.

Friends and colleagues, what I really wish to underscore is that transportation is not just about steel, concrete, and asphalt. It is about people and their struggle for freedom.

As I have noted, transportation has always played an important role in our Nations’ history — not always pleasant for African-Americans, for example from slave ships to the “New Frontier.” Yes, even my own personal experiences relate to transportation. I first looked through a transit when the city paved the streets in front of my house. One look and I was hooked.

Idreamed of moving to different places, growing and obtaining a position in a profession usually unthinkable for a person of my hue to invade.

Transportation also is about giving all, inclusive “all,” the opportunity to participate in that arena through education. It is ours to do, yours and mine, those things that ensure opportunities and that make sure that regardless of race or gender or age or nationality or disability, all citizens can sit at the table of abundance and enjoy. But, we also have the responsibility or burden of struggle in moving America forward.

It is important that the word be sent forth that African-Americans not only wish to be a part of the rewards of work, but that they also wish to be a part of the work itself. It is important that you tell the story of those whom you represent, that you help those who know that talent, energy, and commitment are essential to the task at hand, that these individuals to whom you give voice and know how to recognize that it is important — it is that they are as committed, as determined, and as necessary as those at the table.

Issues for Consideration

The issues to be considered are appropriate, current and necessary. The Republican Congress reducing federal funding to local transit systems, which might include significant cuts in operating assistance. Fare hikes are becoming an important topic in the transit community. Policy and program changes at the federal level have important impacts on the continued mobility of communities.

Recent findings of the Nationwide Personal Transportation Study (NPTS) noted that trip rates for Blacks have increased faster than for Non-Blacks. This study showed that the number of Blacks becoming licensed to drive increased by 27.9 percent from 1983 to 1990, supporting an increasing demand for travel using privately owned vehicles. Increasing growth in travel by Blacks suggests needed funding for transit, roadway, and infrastructure improvements serving Black communities. Greater access to employment opportunities and services within the Black community, or
from these communities to suburban locations, is needed in order for this community to prosper economically and socially.

- Requirements of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) mandate increased community participation in developing transportation systems.

- Impact on Blacks and other minorities in the transportation industry of the Congressional attempts to repeal Civil Rights legislation and Affirmative Action programs that prohibit discrimination.

- The impact on minority communities from transportation facilities that pollute and disrupt neighborhoods.

- Significant impact on Blacks and minorities of communication and technology improvements in society. How will products generated through Intelligent Transportation System (ITS) improve or hinder chances for low income and minority groups to prosper or be placed in mainstream America?

**Other Issues to be Addressed**

Congestion pricing should be considered because African-Americans occupy the largest share of transit riders. As noted in "Congestion Pricing: Issued and Opportunities, Implementing Congestion Pricing Winners and Losers" by Patrick De Corta-Souza, advanced planning is a must, because peak pricing exists during higher congestion during times when many African-Americans are on jobs where they are required to work during these periods.

- Florida’s need for the National Highway System and its impact.

- Florida’s Travel and Tourism Industry and its impact on and potential benefits for African-American.

**We Must Work to Set the Agenda**

The only limitations we have are the limitations we place on ourselves. Our key is not to set the priorities of what is on our agenda, but to place on the agenda our priorities. The Book of James 1:2, “My brethren count it all joy when you fall into divers temptation.” We develop faith and wisdom. We have to ask ourselves the fundamental question, “Are we going to stand on the sidelines and perhaps tell the transportation story as a history?” If we only discuss what we hear or read, we will be discussing history. Look about you, this is the first time we all have been together. We need to network and build partnerships. Are we going to be a part of making a significant contribution? The choice is ours.

I invite you, if you would, to rededicate yourselves. Rededicate yourselves to this important task to keep America moving, because it does more than that. As noted before, transportation is about more than just steel, concrete, and asphalt. Our effort helps to keep America free, helps to give all the opportunity to be all we can be as America moves to the next century, and let us, together, explore new frontiers.

"If we only discuss what we hear or read, we will be discussing history."
The Continuing Evolution of Public Transportation Policy

Wade Lawson
Director of Planning and Development
South Jersey Transportation Authority
Atlantic City, New Jersey

I would like to thank the Center for Urban Transportation Research (CUTR), Federal Highway Administration (FHWA), Federal Transportation Administration (FTA), Conference of Minority Transportation Officials (COMTO), and the National Forum for Black Public Administrators (NFBPA) for extending me the invitation to speak with you this afternoon regarding the continuing evolution of public transportation policy and its impact on the minority community.

I bring you greetings from the Governor of the State of New Jersey, the South Jersey Transportation Authority and its Board of Commissioners, and the staff of the Authority. I would be extremely remiss in my duties as a member of the Board of Directors of the Greater Atlantic City Chamber of Commerce, if I did not exhort the virtues of Atlantic City, one of the premier gaming resorts of the world, home of the famous Atlantic City Boardwalk, host of the Miss America pageant, and one of the excellent tourist vacation spots on the East Coast. I invite all of you and your families to visit us when you can to enjoy our hospitality, fine beaches, and various attractions in the region.

The Role of the South Jersey Transportation Authority (SJTA)

The SJTA is responsible for the following transportation services:

- Operation and maintenance of the Atlantic City Expressway, a 44-mile toll road between Atlantic City and Philadelphia;
- Management of more than 334,000 annual casino charter buses bringing approximately 8.5 million annual visitors to Atlantic City;
- Regulation of the casino bus charter services as it relates to the designation of bus routes, bus parking and bus operations in the casinos, and other non-casino destinations;
- Operation of several automobile and bus surface parking lots and a six-story automobile parking facility (825 spaces) with retail space;
- Coordination of the development of various transportation management strategies to facilitate traffic movement in the region;
- Board member of the South Jersey Transportation Planning Organization, the metropolitan planning organization (MPO).

Problem Statement

What effect does minority representation or lack of representation have on the transportation decisionmaking process? How do these policy decisions influence the development and implementation of transportation policies in the minority community?

Background

The transportation industry, as you may know, is a multi-billion dollar industry.
Based on information for the calendar year 1991, total governmental expenditures for transportation services and facilities equaled $105.4 billion.

I have included the financial profile of the transportation industry, shown in Table 1, to provide a perspective of the magnitude of the transportation industry on our national economy.

### Table 1. 1991 Transportation Services and Facilities

<table>
<thead>
<tr>
<th>Mode</th>
<th>Dollars Spent (Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways</td>
<td>$76.0</td>
</tr>
<tr>
<td>Airways/Airports</td>
<td>14.0</td>
</tr>
<tr>
<td>Public Transit</td>
<td>9.6</td>
</tr>
<tr>
<td>Rivers/Ports</td>
<td>3.5</td>
</tr>
<tr>
<td>Railroads</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$105.4</strong></td>
</tr>
</tbody>
</table>

Some of you may ask what does this mean with respect to jobs? Based on national statistics, it is fair to say that for every $100 million capital investment in transportation, 5,800 new jobs are created, approximately 600,000 jobs were created nationally as the direct result of capital investment in transportation services and facilities in 1991. (This number does not include the employees that are currently employed in the transportation industry. The public transportation industry alone, based on 1994-95 statistics, employs approximately 302,000 people alone.)

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Transportation is one of the most important aspects in our community in that it provides access to employment opportunities that are available at the various employment centers. It is directly responsible for stimulating economic development, moving goods, services and people within our respective communities, and provides a means of travel for residents. This point is particularly significant as we discuss economic development and the impact of transportation on our community because through my experience in the industry. All too often the minority community is not familiar with the comprehensive nature of the transportation industry nor its overall impact on our day-to-day lives.

The minority community traditionally has focused on issues such as: housing, employment, education, civil rights, and crime, and justifiably so. However, I would submit that transportation is equally important and should be considered an issue that affects the overall mobility and vitality of the minority community. The ability of the community to access employment opportunities, housing, education, medical and social services are directly related to the availability of transportation services that provide mobility options to the community as well as providing the necessary infrastructure to support regional growth and development.

During the 1970s and 1980s, black mayors in metropolitan urban cities such as New York, Chicago, Philadelphia, Washington, D.C., and New Orleans were elected to office. Because of their appointive powers as mayors, we began to see minority board members in the transit industry. These minority board members began to influence the decisions of their agencies as related to the appointment of senior executive staff, awarding of contracts, location of facilities, bus routes, rail lines, pricing, marketing, purchases of equipment, and the overall development of transportation policies. However, it appears that over the last five years the number of appointed or elected board members and senior executive staff positions, such as Executive Director, General Manager, Deputy General Manager, Assistant General Manager, in the public transit industry stabilized. In my opinion, this trend has occurred for the following reasons:

- continued regionalization of transportation agencies or authorities;
- appointive authority expanded from one municipality to several that usually involved suburban or rural communities;
- boards approaching issues regionally as opposed to the impact on an urban community (The ability of the local mayor or
community to affect policy decisions is reduced.);

- Lack of minority political control on the appointive process;
- Appointments made by other governmental bodies outside the jurisdiction of the local community;

Table 2. Transportation and Public Utilities Employment

<table>
<thead>
<tr>
<th>Source: U.S. Department of Labor, 1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total employees</td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>Executive/Administrative</td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>1985</td>
</tr>
<tr>
<td>Black Males</td>
</tr>
<tr>
<td>Females</td>
</tr>
<tr>
<td>Black Managers</td>
</tr>
<tr>
<td>Female Managers</td>
</tr>
</tbody>
</table>

- Reductions in the number of appointed positions available to local elected officials.
- Traditional institutional barriers;
- The insensitivity of the majority community to the needs of the minority community;
- Executive level employment opportunities exclude qualified minority candidates (perpetuating the "Good Old Boy" system).

What Happens when Minorities are Under Represented or Not Represented in the Decisionmaking Process?

- Traditionally, transportation services and facilities are oriented to the urban area that also serves as the place of residence of the minority community. These services significantly influence the quality of life, such as air quality, noise pollution, congestion. However, these policy decisions are made by nonresidents.
- Transportation policy and long-term planning decisions regarding fare structures, location of facilities, award of contracts, toll roads and highway alignments, type of services and equipment provided, service reductions, and so on, are made without the input of the minority community. More often, minorities are adversely affected by these decisions.
- Senior executive and policy level employment opportunities for minorities are diminished.
- Minority contractors are not aggressively pursued to participate in procurement opportunities. Because of this practice, employment opportunities for minority community-based businesses decline.
- When operating funds are reduced, transit services are disproportionately cut in the minority community.
- Changes in fare structures and service availability significantly influence the transit-dependent minority community with respect to access to job opportunities, medical, social services, and so on.

Minority Involvement in the Transportation Decisionmaking Process in Atlantic City

- During the tenure of the City's first minority mayor, the Mayor's office participated in the selection of the first and only minority executive director of the county transportation authority.
- A representative of the Mayor's office, the executive director, was selected to serve as a member of the Authority's Board of Directors.
- Community concerns regarding bus routings and traffic congestion were forwarded directly to the Board.
- Senior staff included minorities and women in decisionmaking positions.
- Minority employees who were primarily concentrated in entry level positions had their salaries upgraded by 15 percent during the first year of the minority executive director's tenure.

"Changes in fare structures and service availability significantly influence the transit-dependent minority community..."
Minority representation in the transportation decisionmaking process is essential for the development and implementation of various policies...and the future growth of a total community.

- Minority vendors were awarded contract opportunities.
- Atlantic City owned the airport and required that the contract operator hire and promote qualified minority candidates.
- To solicit input on developing transportation policies or initiatives, outreach meetings were held within the minority community. These meetings were attended by agency board members, senior staff, and representatives of the minority community.

What Can the Minority Community Do to Gain Representation in the Transportation Decisionmaking Process?

- Identify and prioritize the transportation issues in your community.
- Develop short and long-range strategies;
- Understand the transportation process and the length of time required to implement new initiatives;
- Develop staying power;
- Familiarize community representatives with the transportation decisionmaking process;
- Identify community residents to monitor the status of various transportation issues and attend transportation authority or MPO meetings;
- Develop coalitions with other minority communities as well as the minority business community;
- Support elected officials who appoint minorities to transportation policy boards and senior executive staff positions.
- Sensitize individuals appointed to policy board and executive management positions to the existing and projected needs of the minority constituents, as well as the total community.
- Maintain regular meetings with elected officials, policy board members and senior staff to familiarize the agency with the various issues affecting transportation in the minority community.

Minority representation in the transportation decisionmaking process is essential for the development and implementation of various policies to improve mobility, job opportunities, economic development, and the future growth of a total community.
Creating An Equal Opportunity Transportation System

Angela Fogle
Transportation Planner III
Fairfax County Transportation, Virginia

Last year while examining the travel and commuting trends identified in the 1990 Nationwide Personal Transportation Survey, I noted that despite the current transportation and air quality problems experienced in this country, the use of single occupant vehicles continues to rise, and there is a decline in the usage of other modes. However, studies such as these seem to neglect to explore the impact of such trends on the people without vehicles. In reflecting on what originally sparked my interest in the transportation planning field, I recalled that during my original investigation of transportation related issues, I discovered that very little information existed that explored or researched at a national level how to design transportation systems that serve the needs of the transportation disadvantaged, specifically women and minorities. From that point on, I was on a mission.

This paper examines the impact the passage of Intermodal Surface Transportation Efficiency Act (ISTEA) has had over the past three and one-half years, historic appointments to the United States Department of Transportation (USDOT) by the Clinton Administration, and the potential for increased opportunities for transit. In discussing the future, I will discuss the impact of the new Republican Congress on transportation, specifically public transportation. I will briefly provide my perspective on the impact the information superhighway will have on the minority community and provide recommendations for improving the current transportation picture.

The automobile has been touted as a means of freedom and flexibility in people’s lives, but many people do not have safe, convenient access to a car or other reliable means of transportation. Transportation access is crucial to decisions such as where an individual will live or work and it can have a profound impact on the quality of life. Most of the captive riders using mass transportation systems are the economically disadvantaged, the physically challenged, women, the elderly, and minors.

Over the past 30 years, transportation and land use planning have closely followed two major events that occurred in major metropolitan areas: the relocation of whites to the suburbs and the construction of the interstate system. Since 1950, more than 85 percent of national population growth has occurred in suburban areas. Currently 44 percent of America lives in suburbs surrounding the central cities of large metropolitan regions (Pisarski, 25). Transportation systems within major metropolitan areas over this 30-year period were designed to meet the commuting needs of those fleeing the central cities. For example, in Baltimore, Chicago, Cleveland, and Detroit, whites made up as much as two-thirds of the central city population in 1960. Census population data suggested that while whites made up 82.2 percent of the central city population in urban areas in 1960, by 1990 whites made up less than 15 percent of many central city populations in urban areas.

During that same period, the nonwhite population in many central cities of major metropolitan areas more than doubled.

Women and minorities make up a small percentage of engineers and planners in this country, although they represent most of the transportation users. A 1991 American...
Planning Association survey determined that only 5 percent of those in the civil engineering profession are women and 7 percent are minorities. In addition, women represent 26 percent of professional planners, while minorities represent only 3 percent of all planners (Lewis, 13). An examination of the existing transportation systems in many major metropolitan areas in America as they relate to population, housing, and employment trends, infers that ethnic and gender disparities within engineering and planning fields have had a negative impact on transportation decisionmaking in this country.

Millions of research dollars have been spent analyzing transportation trends in America. Historically, transportation models used to forecast travel trends have represented the travel patterns of white males. Therefore, despite the dramatic shift in the demography of major metropolitan areas, when reports on commuter travel trends are updated to determine future transportation needs, the data continues to represent the travel patterns of white males. Transportation data, and more specifically, mass transportation data should be designed to consider the travel behavior of a broader spectrum of the general public.

Many consider the passage of ISTEA to represent the beginning of a new era in transportation decisionmaking, due to the Act’s provision of greater opportunities for public involvement. The Federal Transit Administration (FTA) and Federal Highway Administration (FHWA) jointly developed metropolitan and statewide planning rules and regulations to guide the development of transportation plans and programs under ISTEA. The regulations require greater opportunities for non-traditional participants to provide meaningful input during the transportation decisionmaking process. Non-traditional participants include such groups as the railroad and trucking industry, environmental groups, businesses, minorities, and the elderly.

In order for this new legislation to influence the transportation disadvantaged, however, a great deal more than opportunities to provide input during the process is necessary. Transportation decisionmakers must design transportation systems that provide safe and affordable access to socioeconomic basics such as housing and employment opportunities.

Unfortunately, state departments of transportation, which are predominantly composed of white males, continue to control the decisions concerning the design and construction of transportation systems in this country. Therefore, existing transportation systems represent the travel needs of white males.

The American Public Transit Association’s (APTA)”Access to Opportunity: Linking Inner City Workers to Suburban Jobs” report suggested that federal investment in highways has been four to five times higher than investment in transit. Over the past forty years, two out of every three new jobs created have been in the suburbs.

The Nationwide Personal Transportation Survey (NPTS) results suggested that African-Americans and Hispanics represent the largest group of those who walk or use transit for work trips. It also was determined that those who live on the worst housing are more likely to walk or use transit. During his testimony at the 1994 Congressional Black Caucus Transportation Braintrust, Federal Transit Administrator Gordon Linton stated that African-Americans comprise approximately 11 percent of the population and represent 33 percent of transit riders. Hispanics represent 8 percent of the population and approximately 16 percent of public transportation riders. Whites make up 70 percent of the population and 44 percent of users of public transportation. Mr. Linton also emphasized the fact that transportation is a vital link to opportunity.

Recommendations

After giving a great deal of consideration to the many issues I have raised, I considered these options (Unfortunately, my solutions to these problems are not very original):  

- Push for radical changes in DOT funding. If this does not occur before reauthorization, then ISTEA is in danger;  
- There is great opportunity to link minorities with environmentalists because in a sense their goals are the same: control...
growth, preserve existing infrastructures, and make jobs more accessible to people;

- Make careers in planning and engineering fields seem more rewarding to our youth, such as school children and inner city programs;
- Teach children about planning. The Louisiana APA Chapter has a one week camp for teens.
- A short-term bandage is to increase reverse commuting opportunities that will link inner-city workers to suburban jobs. Meanwhile, land use and growth control measures must be examined. (In the current political climate, realistically, I do not anticipate a great deal of support for this option.);
- Minorities must increase their knowledge of what is at stake with the information superhighway.

Under the Clinton Administration, reverse commuting is being promoted again. Southwestern Metro Transit Commission (SMTC), Eden Prairie, Minnesota, is an example of a transit agency committed to reverse commuting opportunities. The agency covers three suburban communities in the Minneapolis-St. Paul area. With a small service area, population of 70,000, SMTC operates 15 express trips with a 10-vehicle, demand-responsive paratransit system and a four-bus shuttle system that connects to the regional transit system. The systemwide ridership of 275,000 is anticipated to double. The system has had a ridership increase between 20 and 25 percent each year with no marketing necessary. In 1992, 200 one-way reverse commute routes were provided; nine months later 5,578 one-way trips were provided.

Reverse commute funds come directly from a small tax assessed to homeowners and businesses in each community and go to the regional transit authority. Ninety percent of funds collected goes back to SMTC. The transit agency receives no state or federal funds.

SMTC sponsored a job fair at a suburban mall. Initially, 50 companies participated. Out of the 400 people there, approximately 150 people were hired for full-time permanent positions with full benefit packages. SMTC has already drawn interest from 100 employers for the next job fair.

The Future

THE INFORMATION SUPERHIGHWAY

According to the May 1994 issue of Black Enterprise, the FCC announced plans to auction 4,000 personal communication service licenses (PCSs). PCSs represent wireless, non-cellular systems designed for computers, cordless telephones, faxes, and pagers.

According to the June 1994 issue of Jet magazine, the Information Superhighway is filled with roadblocks for minorities and women. Andrew Barrett, Commissioner of the FCC feels that taking advantage of the information superhighway may be too expensive for minority-owned firms. It is difficult for minority businesses to get bank loans to develop properties, such as dividing the airwaves for wireless communication services. Of the approximately $800 million in bids received by minority companies, many defaulted on their payments due to financial difficulties. Mr. Barrett said that “many large players in the telecommunication industry will bid on the spectrum to block any participation by women and minorities on the information superhighway.”

An article in Business Week magazine suggested that in 1978, only 0.5 percent of the 10,000 broadcast properties were owned by minorities. In 1995, only 2.9 percent are owned by minorities. Congress recently voted to eliminate the minority tax break citing abuse by big companies using small minority businesses as fronts. The VIACOM deal was one specific example where Frank Washington owned only 20 percent of the company, but VIACOM stood to gain $600 million in tax breaks.

Interestingly, the article seemed to look only at abuses and not at success stories in areas where minorities were locked out. The Granite Broadcasting Group is an example of how the program could work positively. Granite sales are skyrocketing and shares are very high. The company continues to acquire new stations.

According to an article entitled “Technological Bypass: Getting Around the Information Superhighway Roadblocks” by
Reginald Stuart in *Emerge* magazine, just as with the interstate highway "Black Americans risk being roadkill on the information superhighway." There is a need for technologically literate children in minority communities because the potential for separating the haves and the have-nots is great. The information superhighway has the potential through the Internet to connect homes, businesses, work places, schools, and so on. It opens many opportunities for computer users. The Bureau of Census data on computer use identified the following trends in 1989:

At home, 26 percent of white children, ages three to 17, use computers, while 8.4 percent of black children and 28.1 percent of other race children use computers. Of those persons 18 and older, 18.3 percent of whites use computers, 8.4 percent of blacks and 20.9 percent of other races. At school, 48.2 percent of white students, 27.6 percent of black students, and 43.6 percent of other race students use computers. (Note: most minority schools do not have computers.) On the job, 48.2 percent of whites, 27.6 percent of blacks, and 36.4 percent other races use computers.

**HOW TRANSIT IS FARING IN THE FUNDING AREA**

In the new Congress, it appears that many Republicans view mass transportation as another social program, therefore eligible to be cut or eliminated in the future. They continue, like many, to overlook the hidden costs of driving. New budget proposals by Republicans all support cuts to transit and other "social programs." They push toward privatization by forcing states to be responsible for providing transportation. Obviously, they would have to seek assistance from the private sector.

The new Republican governor of New York, Pintaki, immediately pressured MTA to eliminate subway and bus service rather than raise fares. Under the MTA Board's plan, express bus service has been eliminated, subway shuttle hours have been eliminated, and some stations are being closed. These types of cuts often push people back to their cars and cause others to lose their jobs. Public transportation for school kids is also affected.

**Impact of the New Republican Congress on ISTEA and Other Transportation Related Issues**

The National Governor's Association's (NGA) full scale attack on the Clean Air Act has been very successful, thus far. The Republicans have managed to require the Environmental Protection Agency (EPA) to scale back the required enhanced Inspection and Maintenance (I/M) programs and efforts are underway to abolish mandatory employee commute options (ECO) programs. Earlier this month, members of the NGA met with the EPA to discuss playing a greater role in revising or modifying transportation conformity requirements. The NGA would like to reevaluate the Clean Air Act Amendments (CAAA), specifically the transportation conformity portion.

A closer examination of the impact of revamping the conformity requirements identifies several obvious factors. Conformity requirements are viewed as a threat because they require state and local governments to explore options other than laying down more pavement. It recommends controlling sprawl, encourages revitalization of downtown areas where the infrastructure already exists and transportation access is not reliant on the automobile, and has meant reexamining reverse commuting. When Congress enforced efforts to promote clean air by enacting the Clean Air Act Amendments and ISTEA, they were not fully aware of the impacts.

**NATION HIGHWAY SYSTEM (NHS) vs. NATIONAL TRANSIT SYSTEM (NTS)**

NHS is still under consideration, NTS appears to be no longer under consideracation. The year 1992 brought minorities and women greater opportunities for advancement with Clinton's historic appointments to the USDOT. In order for the goals of ISTEA to be met, political pressure must be exerted to ensure the state DOTs, MPOs, and local planning agencies develop transportation plans and programs that ad-
equately serve all Americans. Minority leaders need to become more involved in transportation related issues because transportation can be used as a tool to improve the social and economic conditions of their constituents. The statewide and metropolitan planning regulations suggest that within metropolitan areas, to ensure that the needs of all citizens are met, "...the personal involvement of central city elected officials in the planning process will be a significant factor in determining whether their priorities are included in metropolitan transportation plans and programs. Their involvement also provides a mechanism for ensuring that central city issues, such as, access to jobs and affordable housing, reverse commute concerns, and economic stimulation through redevelopment or mobility projects, are addressed (23 CFR Part 450.300)."

It is important that elected officials acknowledge the linkages between transportation access, poor quality of housing, and the high unemployment rates in their areas. The next step for elected officials is to become familiar with the new legislation and determine how funds can be used to "empower" their communities.

Minorities must seek key roles as stakeholders in the transportation decisionmaking process in order for their transportation needs to be represented. Efforts should be directed toward developing strong outreach programs designed to increase minority representation on MPO Boards and serving on influential transportation, technical, and policy committees.

Closing

It is an honor to be invited to participate as a panelist at this event. When I received the final agenda and noted the many distinguished speakers who would be participating, I felt a bit overwhelmed; perhaps slightly intimidated. During graduate school and my early years as a planner, I have had the opportunity more than once to hear many of them speak. I only hope as I progress as a planner, I can serve as an example to others in the same manner as my peers have served as an example to me. I challenge all present to reexamine the role we can play as planners and engineers. We must consider how to implement policies and plans that will improve transportation accessibility for the transportation disadvantaged in our communities and regions. Often it is observed that providing access has been overlooked. This is not done intentionally, but simply because those persons designing the system neglect to consider people who are not "like them."
Transportation Redefined

Marianne Taylor Crate
Citizen Participation Coordinator
East-West Gateway Coordinating Council
St. Louis, Missouri

Background

For many residents living in the urban core of the St. Louis metropolitan region, access to employment and other opportunities has been limited by several factors. These include, but are not limited to, a lack of personal transportation, land use and development patterns, and shifts in employment from manufacturing to service sector jobs. These are the barriers that individuals and communities must overcome to become self-sufficient and sustainable.

Propelled by the tough questions and choices proposed by the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, the East-West Gateway Coordinating Council began the development of a new planning process in which members of four agency departments were brought together with several citizens and professional stakeholder groups to develop a new way of doing business. This process, entitled "Transportation Redefined," refocused transportation decisionmaking on the specific needs and experiences of the transportation customer. It focused on seven, broad regional goals:
- resource conservation;
- access to opportunity;
- congestion mitigation;
- goods management;
- safety;
- sustainable development; and
- preservation of the infrastructure.

Disparities in the Region

Problems associated with immobility are most often invisible to those residents who travel freely and independently around the St. Louis metropolitan region. However, an old car that will not start, a transit trip that is too long, a childcare center three blocks off the bus line, a van without a lift, and bus service that ends before the night shift is over are all "little" things that can present enormous obstacles to the individuals and families who experience them. While these problems manifest themselves at the local community level, they are a part of a broad regional dynamic.

At the close of the World War II, the St. Louis area was the eighth largest city in the United States with a population of more than 850,000 people and population density of 14,000 persons per square mile. Forty-eight percent of the region's population was in the City of the St. Louis, 65 percent of the businesses, and more than half of the region's jobs were there. Today, however, the picture is very different.
St. Louis is a region of nearly 4,500 square miles whose assets are geographically dispersed, but well-connected by an expansive roadway system. According to the 1990 Census, the metropolitan area is the 17th largest in the United States with a population of 2.4 million people. Developed land in the St. Louis metropolitan region increased by 355 percent, with the largest rates of increases occurring to the west and northwest of the center.

Between 1950 and 1990, the City of St. Louis along with 13 other smaller municipalities that border the city, lost more than half its population. Twenty percent of the region's population lives in these communities but make up 50 percent of the region's poverty. Most of these areas are more than 90 percent African-American. Residents of these communities are more than twice as likely to be unemployed as those in other parts of the region. They live in households that are nearly seven times as likely not to have a private vehicle, yet less than 50 percent of the region's jobs are accessible by public transit. Higher portions of youth, older persons, and persons with disabilities live in most of these communities as well. Concerned that the continuation of suburban development patterns without complementary investments in the social and physical infrastructure of the inner cities may result in further deterioration of the urban core and a widening of the economic gap that already exists, the Council began to refocus its planning efforts.

Community Mobility Market Analysis Planning: What is it?

In 1994, the Council developed and began implementation of an ambitious community planning initiative to engage residents of the St. Louis metropolitan region in the transportation decisionmaking process. This initiative, entitled “Community Mobility Market Analysis Planning,” is being replicated and integrated throughout the daily transportation planning activities of the Council.

Community Mobility Market Analysis planning was designed to ensure a reasonable range of mobility choices for all citizens of the region. Its primary focus is to improve access to employment and other opportunities for residents of inner-city communities who have not been well-served by the transportation system in the past. Community Mobility Market planning targets areas in which the unemployment rate is at least twice as high as the entire region. It calls for community residents and regional planners to work together to assess the transportation and other mobility needs of selected communities and establish a set of short-term milestones. These milestones will be used to gauge progress toward long-term objectives. This planning process is grounded in an asset-based approach and uses the wealth of resources found within communities to overcome the effects of poverty.

Description of the St. Louis Region's Community Mobility Market Area

The Community Mobility Market Analysis Area for the St. Louis metropolitan region has been divided into two study areas, one in Missouri and the other in Illinois. These areas are inner city areas with relatively high levels of unemployment. The first mobility market area, found in Missouri, comprises the northwestern portions of the City of St. Louis and neighboring northeastern portions of St. Louis County. These are older, well-developed areas that have been losing population and employment since 1950. The 1990 population for this area was approximately 82,400. Less than two-thirds, 61 percent, of the residents are adults of working age. The unemployment rate of 11.6 percent compared with the regional rate of 6.4 percent. Fifty-five percent of those unemployed and looking for work were men and 45 percent were women. Although the initial area was defined by clustering census tracts, when the area was redefined by municipal boundaries, more relevant from a community viewpoint, portions of 13 discrete municipalities were included.
Unlike the first mobility market study area, the second study area comprised only of the City of East St Louis. This city has a broad geographic area, 14.4 square miles, but a population of only 40,944 that is half the size of the Missouri portion of the mobility market area. Between 1980 and 1990, the city has experienced a 26-percent loss in population. Fifty-nine percent of the City residents are adults of working age. The unemployment rate in the City in 1990 was 24.6 percent, almost four times that of the region as a whole. Only 3,559 adults of working age are listed as unemployed; 14,316 people, aged 16 and older are not in the labor force and not counted in the unemployment figures.

There is an enormous level of economic disparity between these two communities and the region. This level of disparity reflects the negative side of the movement of jobs and middle to upper income households into suburban areas. It also suggests that the current transportation system is not fully supporting the economic and social needs of the population left in the region's core.

**Steps in the Community Mobility Market Planning Process**

Once a geographic area has been defined, the planning process consists of the following steps. These steps do not have to be completed in sequential order. However, each component is necessary for effective implementation.

**STEP 1 IDENTIFY A COMMUNITY MOBILITY ADVISORY GROUP**

The group identified should be a broad-based group with representatives from all the relevant stakeholders in the mobility market area. It can be an existing community-based group or a newly formed group convened solely for this purpose. The Advisory Group will have the following five primary functions:

- To ensure that all relevant information about the area is taken into account;
- To ensure that the strategies considered and selected are implementable and appropriate;
- To find ways to coordinate transportation improvements with other investments in the area;
- To monitor and evaluate strategy implementation; and
- To act as advocates for the needs of mobility-disadvantaged persons in the regional planning process.

**STEP 2 CHARACTERIZE IMPEDIMENTS TO ACCESS**

In this step, mobility impediments of the area are documented. "Mobility impediments" may refer to a range of characteristics, including: private vehicle ownership rates, educational attainment rates, inadequate public transportation service, poorly maintained facilities, distance from major employment or service centers, crime rates, structural barriers at transportation facilities, lack of information about how to use public transportation, absence of child care or other support services accessible by existing transportation modes.

**STEP 3 CLARIFY MOBILITY OBJECTIVES**

This step calls upon the Advisory Group to clarify as well as validate the identified mobility goals and objectives to which community mobility strategies will be applied. "Mobility objectives" are aspects of economic and social access that can be supported by transportation and other mobility-related objectives. For example, improved employment rates in the market area is a mobility goal that can be supported by the mobility objective of increasing the number of home-to-work trips from the mobility market area to suburban employment centers.

**STEP 4 IDENTIFY ORIGIN AND DESTINATION POINTS**

In this step, origin and destination points are determined. These points are defined by the community. They can be

"This level of disparity... suggests that the current transportation system is not fully supporting the economic and social needs of the population left in the region's core."
"The inventory of the community’s infrastructure, is the most important step in this entire community planning process because it focuses on assets rather than deficits."

**STEP 5 INVENTORY COMMUNITY CAPACITY**

The inventory of the community’s infrastructure, is the most important step in this entire community planning process because it focuses on assets rather than deficits. These assets are multidimensional and include those at the neighborhood, community, and regional levels. For purposes of this study, we modified and adopted a community capacity assessment tool developed by John McKnight and associates at Northwestern University’s Center for Urban Affairs and Policy Research. This tool considers three levels of assets available for potential community improvement. They are a community’s:

- **Primary building blocks** (assets and capacities found inside a neighborhood and largely controlled by the neighborhood);
- **Secondary building blocks** (assets found within the community but largely controlled by outsiders); and
- **Potential building blocks** (resources originating outside the neighborhood and controlled by outsiders).

A few examples of each of these building blocks from a community mobility standpoint are as follows:

**Primary building blocks for mobility:**
- Residents with autos who are willing to provide rides to neighbors;
- Neighborhood-based carpool or rideshare programs;
- Existing information and communication channels connecting mobility disadvantages with persons in the community.

**Secondary building blocks for mobility include:**
- Existing transit and paratransit service in the community;
- Light rail service through or stopping in the neighborhood;
- Existing or planned transportation facilities or improvements in the community;
- Community reinvestment banks serving the community.

Potential building blocks for mobility:
- Local, state and federal transportation funds for which projects in the community may be eligible;
- Employers outside the neighborhood who might provide transportation subsidies or services;
- Transit or paratransit service currently available outside the community that could be expanded into the community.

**STEP 6 IDENTIFY POTENTIAL IMPROVEMENT STRATEGIES**

This step is often the most difficult step in the planning process because some of the strategies to be implemented go beyond traditional transportation improvements. The criteria used to identify potential community mobility markets often suggests that they will include the transportation system as well as the human service system, the area economy, educational system and others. The ability to connect aspects of these various systems at the neighborhood, community, and regional levels becomes crucial.

**STEP 7 SELECT THE PREFERRED STRATEGY(IES)**

The seventh step in the community mobility market planning process is to select the preferred strategy. Selections are evaluated by using techniques of cost-benefit analysis specifically developed for mobility market purposes. The community also is actively involved in the selection process by helping to determine whether the preferred strategies are appropriate and can be carried out.

**STEP 8 CONSTRUCT THE ACTION PLAN**

In this step, an action plan is constructed in cooperation and collaboration with the Advisory Group. The plan should include these elements:

- The selected strategy or package of strategies;
- Delineation of roles and responsibilities of lead agencies, organizations, or in-
stitutions who will be responsible for the plan’s implementation;
☐ a financial plan;
☐ a community education and communication strategy; and
☐ an evaluation plan which includes a pre and post assessment of short and long-term performance measures.

STEP 9 SECURE FUNDING

The final step in the analysis of the community mobility market planning process is to secure funds for implementation. For the transportation elements, this may mean submission of the project for programming on the transportation improvement plan (TIP), consideration of other federal enhancement funds, or other sources of public or private funds.

The Implementation Phase: What’s Happened?

Since the implementation of this innovative community-oriented planning process, several important lessons have been learned. A few examples of those ways in which we have attempted to address some of them are as follows:

1. Economic and socially distressed communities are wary of “outsiders” — especially governmental or quasi-governmental agencies, as the Council is perceived to be— coming into their communities bearing the “We Are Here to Help” banner.
   The Council is not absolutely sure how to address this concern effectively. However, it has made a commitment to continuously engage residents of these communities in the planning process by closely working with institutional and neighborhood partners who are respected and trusted in the community.

2. Planning is a long-term process, undertaken to address long-standing problems or issues, and involves many players in the community. The process needs to be flexible and to allow for relevant stakeholders to flow in and out.

3. Transportation is such a broad issue and means different things to different people. Most people do not understand how transportation planning takes place at the community level.

To address this issue, the Council is in the process of developing several information guides. These guides are designed to educated people not only about the transportation planning process but how to access the transit system. Such a guide, currently being developed for this purpose, is the transit users’ guide. The guide is designed to provide users with information on employment related services and how they can be accessed by those parts of the current transit system connected by light rail. It is called “Link-Up to Success.”

4. Getting people involved in the transportation decisionmaking process requires constantly educating people about the issue. A series of community education forums in the City of St. Louis is being developed as a response to this concern. These forums are designed to focus on how decisions are made about transportation in a community and specific ways in which residents can be involved in identifying problems and promoting strategies for improvement. A guidebook, entitled “Get Connected: A Citizens Guide to Community Involvement,” is being developed to complement these sessions.

5. A well thought-out community planning initiative is only as good as its dissemination mechanism. In addressing this issue, the Council has developed several transportation newsletters and began collaborating with many non-traditional transportation partners to educate people about transportation as a critical element in community revitalization and economic development. This mechanism also is used to disseminate information about the transportation decisionmaking process.

6. A planning process that is too long and requires too much time before the group begins to see some results is a process that is bound to fail.

7. Most people think of transportation in a vacuum and do not see that transportation can be used to stabilize communities.”
the Missouri Department of Social Services, the Urban League of Metropolitan St. Louis, the Bi-State Development Agency, and the Economic Council of St. Louis to develop a project design for a four-year initiative to link inner-city residents to suburban job opportunities. This initiative, entitled “Bridges to Work,” is part of a national demonstration project designed to measure the extent to which a well-designed transportation-support service program can keep inner-city residents employed and by that stabilize both families and communities.

**Continuing Challenges**

Although we feel this way of doing business has allowed us to embrace the spirit of ISTEA fully, there still are many continuing challenges. These include:

1. Coordinating the goals and objectives of all the relevant stakeholders in a constantly changing political leadership structure.

2. Getting people involved in areas they have not participated in the past, like transportation planning.

3. Getting systems to work together to affect change is difficult. Systems are designed to maintain themselves. Working together is often a foreign concept and no one likes changes in the “way things have always been done.”

4. Getting people to understand that transportation is a critical element in revitalizing and stabilizing communities.
A Broad Human Factors Approach to Intelligent Transportation System (ITS) Technologies and Implications for African-Americans

Jose H. Guerrier, Ph.D.
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Florida International University

Abstract

In order for the Intelligent Travel System (ITS) to benefit its potential users, the characteristics of these users that are relevant to the effective utilization of ITS must impact the design and deployment of the technologies. African-Americans, in general, and African-American elderly, in particular, may be at risk of becoming marginalized as users of ITS unless ITS technologies are made accessible to them. This presentation discusses some of the issues that need to be examined to fulfill the promise of ITS for African-Americans.

As we approach the 21st century, the reality of ITS looms closer. ITS and its related technologies promise to facilitate travel for drivers, users of public transportation, and pedestrians through safer, more efficient, and cost-effective means. However, beyond the engineering progress that is crucial to such development, the proper assessment of the end user is one of the most important considerations for the implementation of a system that will function as designed.

One method that permits an effective assessment of the end user is the Human Factors approach. "Human Factors" refers to a body of knowledge and methods applied to the design of objects and environments used by humans. Its major objective is to facilitate the use of objects and environments by the individuals for whom these were designed. The Human Factors approach conceptualizes the person, the object(s) and the environment(s) with which the person interacts as three components of a system. It follows that any change in one component will affect the others.

In the Human Factors scheme, the person consists of a set of characteristics deemed relevant to their performance with an object in a specific environment. These characteristics may include cognitive, perceptual or sensory, and physical capabilities. The object(s) and the environment consists of a set of demands that are imposed on the user. These demands may include actions that must be performed to accomplish specific tasks. These demands may require expenditure of cognitive, physical, sensory resources or capabilities. It is posited that mismatches between the user's capabilities and the environment's demands may result in a poor performance at best; at worst, injury or death.

A Human Factors analysis poses three questions: What are the tasks to be accomplished? What are the characteristics of the person who will accomplish these tasks? How will these tasks be accomplished?

The identification of the characteristics of the purported user that are relevant to the system will permit the development of hardware and software that are easy to use. A description of the steps follows.

WHAT NEEDS TO BE ACCOMPLISHED?

A multitude of options will exist under ITS depending on the needs of the traveler.
For the traveler — the driver or user of public transportation — these options may include the following:

- Pre-Trip Travel Information to obtain information regarding road conditions, delays, suggested alternate routes;
- En Route Guidance that may consist of navigational information as graphic displays such as maps, written display on a television or computer monitor, or spoken information;
- En route Transit Information will most likely be available to users of public transportation or pedestrians. It may include transfer points, destinations, and so on.

**WHO WILL ACCOMPLISH THESE TASKS?**

As mentioned above, certain characteristics of the user will be relevant to access and use of ITS technologies. These may include:

- Anthropometric or Biomechanical information such as a person's height, weight, the amount of force that can be exerted to perform an action, and the speed with which that action can be performed. For instance, specific health conditions, such as arthritis or Parkinson's disease, can affect biomechanical capabilities of a person. These conditions might impact the use of a keyboard, telephone keypad, or other activities requiring fine motor skills.
- Perceptual or Sensory refers to visual, auditory, and tactile capabilities. One or all of these capabilities will be involved in practically any interaction with ITS technologies. Therefore, performance will depend on the capabilities of the individual in that domain and the extent to which the technology taps that resource. For instance, the visual acuity of a traveler will have great impact on the way he or she receives information on a computer monitor or on a variable message sign.
- Cognitive capabilities may include such domains as information processing and memory. Using the example of information displayed on a computer monitor or a variable message sign, the speed at which a person can perceive, understand, and act upon information received via these media will depend upon their cognitive processing abilities. While there are individual differences in the ways people process information, such factors as diseases may critically affect these capabilities.
- Socioeconomic Status, although not usually a concern of Human Factors, but rather of marketing, is another characteristic that needs to be brought to the forefront of relevant characteristics that impact upon access and use of technologies is socioeconomic status. Specifically, the financial resources of the end user will impact his or her access and, thus extend the use of a specific technology.

**HOW WILL THE TASKS BE ACCOMPLISHED?**

Current projections as to the technologies that will be used to acquire ITS related information include the following:

- cable television;
- personal computer, keyboards, touch screens, voice activation
- Global Positioning Systems (GPS), keyboards, touch screens, voice activation;
- personal digital assistant, keyboards, touch screens, voice activation;
- telephones, digital pads, voice activation.

The devices used and the actions required to operate each of these technologies to obtain desired information will interact with the individual's capabilities and, thus, may affect performance.

**Who Will be the Users of ITS?**

As ITS technologies are being developed and deployed, are the characteristics of Americans who will use these technologies taken into consideration? For instance, the data show that the U.S. population is getting older. It has been estimated that the median age of the population will be 43 by the year 2050. Currently, persons 65 and older make up 12.5 percent of the population of the U.S. By the year 2050, it is estimated that they will make up more than 22 percent of the population. Currently, persons 85 and older are the fastest growing segment of the population. African-American elderly, who currently represent 8 per-
cent of the elderly population, will make up 14 percent of that group by 2050.

**Why Focus on the Elderly?**

Age related changes in people will have some impact upon the use of the hardware and software that will be used to access ITS information. For instance, it has been well documented that aging is correlated with diminished perceptual sensory capability, visual acuity, slower reaction time, general slowing of cognitive capabilities, such as information processing and memory, diminished range of motion, and increased functional limitations. For example, 32 percent of persons 65 or older have a mobility limitation compared with 8 percent of those persons 16 to 64. Rates of functional limitations are highest among those with low income, and not surprisingly, African-Americans in general, and African-American women in particular, have the highest rates of functional limitations among the elderly. To wit, 74 percent to 84 percent of African-American women sixty-five and older had one or more limitations compared with 62 to 76 percent of African-American men, 58 percent to 62 percent of white women, and 50 percent to 54 percent of white men. Rates of chronic illness are also higher between women and African-Americans. Two out of three African-American women reported suffering from arthritis.

The focus on the elderly as the baseline that should be used designing ITS technologies are particularly important since some of the age related changes mentioned above will have serious impact upon use of these technologies. Evidently, if the current trends remain, the African-American elderly are likely to be most affected since he or she has a greater probability to suffer from functional limitations than his or her white counterparts.

Technologies that assist in en-route navigation, such as the Global Positioning Systems (GPS), are currently available. However, much work is needed to determine their usefulness. A recent study of four methods for entering the destination into a route guidance system found that the interface design had a significant effect on the destination entry time (Paelke, 1993). The age of the driver also significantly affected destination entry time with older drivers taking 21 percent longer to enter the destination than younger drivers. The nature of the entry, street names versus numbered streets, was affected by the type of interface used. Older drivers had greater difficulty using one interface, the scrolling option, compared with younger drivers. Older drivers also had greater difficulty keeping their lane position when using a QWERTY keyboard as opposed to other interfaces, such as doublepress, phonepad, or scrolling List. This was attributed to the smaller and more numerous buttons on the QWERTY keyboard compared with the other interfaces.

Likewise, an investigation of the use of car phones by younger persons, those under age 35, and older drivers, persons over age 60, under simulated driving, showed consistently faster performance by younger persons under both manual and voice-activated conditions (Serafin, Wen, Paelke, and Green, 1993).

As illustrated by the above examples, there is a need to include the relevant characteristics of elderly consumers in the development of technologies. This will not only address the needs of our changing demographics over time, but also by facilitating older users, will benefit more of us as well.

**Socioeconomic Status and Access to ITS Technologies**

While the age related changes mentioned above are also applicable to elderly African-Americans, conditions may more likely be found among African-Americans, in general, and elderly African-Americans in particular, that are also relevant to access, such as acquisition of hardware and software that will enable one to gain ITS information, to ITS related technologies, namely socioeconomic status. African-Americans are among the poorest in the nation; in fact the 1990 Census reports that 32 percent of African-Americans live below the poverty level while 34 percent of elderly African-Americans live below the poverty level compared with 10 percent of eld-
as long as the elderly can drive, walk, or use public transportation, they also will be potential users of ITS technologies.

elderly whites. Below poverty level is defined as $6,268 for a single householder 65 or older and $6,800 for a single householder 15 to 64 according to the 1990 Census.

The rate of poverty is higher for African-Americans living in rural areas compared with urban dwellers, 44 percent and 33 percent, respectively. Although many ITS related technologies may not impose a direct cost on their users, especially those who walk or use public transportation due to transit information centers, kiosks, and so on, much of this technology will impose a direct financial burden on drivers who wish to avail themselves of this technology.

Recent projections by Federal Highway contractors directly involved in the development of the architecture for a Nationwide Intelligent Transportation System estimated that the consumer will bear about 84 percent of the cost of ITS operation and maintenance through personal travel support systems, while government costs will be less than 10 percent. The personal travel system will include personal computer desktop units, portable units such as personal digital assistants, smart cards, and in-vehicle ITS related equipment, such as GPS, two-way communication to premium services, travel planning software, and computer displays.

The cost per individual is estimated to range from $175 for very basic service to $2,000 for a one-time cost for installation of hardware and software. As can be surmised, the higher the cost, the more extensive the services. Other monthly service fees may also be levied depending on the extent of services. These costs may appear relatively modest to most of us, however, for a person living on a fixed income of about $5,200 to $6,000 per year, which is the income of about 50 percent of elderly African-American women age 65 and older, these costs are substantial.

While the elderly continue to have mobility needs and must satisfy these to carry out basic activities such as shopping, banking, going to the physician, and socializing, they often have fewer mobility options than their younger counterparts because of the age-related changes already mentioned. The data has shown that older persons are heavily dependant upon the private automobile either as driver or passenger and perform 80 percent or more of their transportation-related activities via private automobiles (Rosenbloom, 1988). This is particularly crucial for the rural elderly who have fewer transportation options than their urban counterparts. At a recent conference on mobility issues of older persons, older persons living in rural areas in Florida have reported not only the lack of public transportation options, but also the necessity for traveling long distances at relatively high costs to fulfill their health care or shopping needs (Guerrier, 1994).

Evidently, as long as the elderly can drive, walk, or use public transportation, they also will be potential users of ITS technologies. Yet, given their economic condition, they may not have access to these technologies unless the latter are made affordable to them. Again, the economic situation of elderly African-Americans places them at greater risk of being kept away from this technology.

*Access to Computers as an Indicator of Access to ITS Technologies*

Beyond issues of affordability are those of development of skills that will promote familiarity with the technologies that will be used to access ITS information. This is an important issue since the likelihood that people will use a technology is related not only to their perception of the usefulness of that technology, but also to its ease of use. This can be enhanced through early familiarization with computers or related technologies. Therefore, access to computers will provide opportunities to become comfortable with that technology. Given the central role that will be played by computers in ITS, access to computers and familiarity with them can be good indicators of access to ITS technologies.

**Race and Access to Computers**

Computers have become integrated into many schools’ curriculums. Yet, a recent article in the New York Times (March 12, 1995, p.10F) reported that fewer than 40 percent of African-American school children
Exploring New Frontiers

Proceedings of Symposium II on

African-American Mobility Issues

April 5-7, 1995
Tampa Marriott Westshore
Tampa, Florida

January 1996

Sponsored by:
Center for Urban Transportation Research
Conference of Minority Transportation Officials
Federal Highway Administration
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Acknowledgments

This symposium was sponsored by Center for Urban Transportation Research (CUTR), the Conference of Minority Transportation Officials (COMTO), the Florida Department of Transportation (FDOT), and the U. S. Department of Transportation, Federal Highway Administration (FHWA).

The symposium team members were:
Fredalyn M. Frasier, Research Associate, CUTR
Eric T. Hill, Research Associate, CUTR
Beverly G. Ward, Deputy Director for Operations, CUTR

The following Steering Committee Members provided guidance and had an active role in making the symposium a success:
The Honorable James Hargrett, Co-Chairperson, Florida Senate
The Honorable Arthur Kennedy, Co-Chairperson, Florida Transportation Commission
Mr. Michael Blaylock, Director of Mass Transportation, Jacksonville Transportation Authority
Dr. Frank Enty, Senior Staff Advisor, Mass Transit Administration of Maryland
Mr. Marion Hart, Public Transit Office Manager, Florida Department of Transportation
The Honorable Gloria Jeff, Associate Administrator for Policy, Federal Highway Administration
Dr. Sylvan C. Jolibois, Jr., Florida International University
Mr. Frank Martin, Deputy Director of Rail Operations, Metro-Dade Transit Agency
Mr. Bill McCloud, General Manager & Senior Vice President, ATC/VANCOM
Dr. Charles A. Wright, P.E., Professor of Engineering Technology, Florida Agricultural and Mechanical University

Developing the symposium required significant technical assistance from CUTR staff members, and local private and public service providers, both during and afterwards. These individuals were:
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Susan Pearson, Tampa Marriott Hotels
Sherry Perry, Student Research Assistant, CUTR
Summary

The Center for Urban Transportation Research, in cooperation with the Florida Department of Transportation (CUTR), convened its first national symposium on African-American mobility issues in March 1994. Building on the discussions and experiences of the first symposium, the second symposium, convened April 5 through 7, 1995, continued the objective of inclusion of the transportation issues relevant to the African-American community. The second symposium held particular significance because of the 1997 scheduled reauthorization of the federal transportation bill. Although reauthorization was not scheduled for another two years, the need existed to strengthen the existing legislation and frame policies to address its shortcomings. The planned topics also seemed to hold significance for policymakers with regard to other minority groups, protected classes, and special populations.

As a multifaceted, multidisciplinary industry, transportation commands the attention of a wide spectrum of professionals. The symposium topics had broad appeal and generated information particularly valuable to transit operators, engineers, planners, equal opportunity specialists, government officials, economists, and transportation policy-makers. Topics that addressed in the plenary sessions included:

- Equal access and mobility: the continuing evolution of policies related to highway and transit funding;
- Emerging technologies and the implications of their impact on the African-American community;
- Entrepreneurs and contracting opportunities within the transportation industry;
- Applied research findings as related African-American travel behavior.

The symposium was attended by more than 80 participants from throughout the United States. The administrators of the U.S. Department of Transportation, Federal Highway Administration and the Federal Transportation Administrations participated in the program along with professionals from across the United States and abroad. Representatives of state and local governments, transit agencies, academia, and the private sector were among the attendees.

At the end of the symposium, a survey of participants' impressions of the symposium was conducted. Participants stated that the symposium met or exceeded their expectations and that "the number and variety of speakers and panelists made the symposium a very worthwhile event." Participants also helped to draft an agenda for the third symposium planned to be held in spring 1996.
SYMPOSIUM II ON
AFRICAN-AMERICAN MOBILITY ISSUES
April 5 - 7, 1995
Tampa Marriott Westshore, Tampa, Florida

Agenda

Wednesday, April 5, 1995

1:00 p.m. ...................... Registration

1:30 p.m.-2:00 p.m. ....... Welcome Eric T. Hill, Research Associate, CUTR
Arthur W. Kennedy, Member,
CUTR Advisory Board & Florida Transportation Commission
Gary Brosch, Director, CUTR

2:00 p.m.-3:15 p.m. ....... Opening Session

Setting the Theme: Perspectives on African-American Mobility Issues

Overview: A discussion on how past and current policies and the current political environ­
ment impact the delivery of service and the transportation needs of the African-American
community.

☐ "Perspectives on African-American Mobility Issues," Charles A. Wright, Ph.D., P.E.,
Professor of Engineering Technology, Florida Agricultural and Mechanical University (FAMU)

3:15 p.m.-3:30 p.m. ....... Break

3:30 p.m.-5:00 p.m. ....... The Continuing Evolution of Public Transportation Policy

Overview: This session examines the significant policy changes at the federal level includ­
ing the Intermodal Surface Transportation Efficiency Act (ISTEA) and other federal legis­
lation currently under consideration and the policy implications that planners and trans­
portation providers must address to ensure the mobility of minority communities.

Moderator: Lorenzo Alexander, Public Transit Office Manager, Florida Department of Transpor­
tation, District Two

☐ "The Continuing Evolution of Public Transportation Policy," Wade Lawson, Director of
Planning, South Jersey Transportation Authority

☐ "Creating an Equal Opportunity Transportation System," Angela Fogle, Transportation
Planner III, Fairfax County Transportation, VA

☐ Presentation appears in this volume
Agenda (Continued)

"Participation in the Metropolitan Planning Process," A. Shaun Collins, Executive Director, Volusia County Metropolitan Planning Organization (MPO), Florida

"African-Americans and the Americans with Disabilities Act," Rosalyn M. Simon, Ph. D., Director, Project ACTION

5:00 p.m.-7:00 p.m. ....... Reception Marriott Hotel

Thursday, April 6, 1995

8:00 a.m.-8:30 a.m. ....... Continental Breakfast

8:30 a.m.-10:00 a.m. ...... Greeting Fredalyn M. Frasier, Research Associate, CUTR

Emerging Technologies and Innovative Programs
Overview: This session presents unique approaches to addressing the transportation needs of minority communities through cultural marketing, citizen outreach, and applied research.

Moderator: Sylvan C. Jolibois, Jr., Ph.D., Assistant Professor of Transportation Engineering, Florida International University

"Transportation Redefined," Marianne Taylor Crate, Citizen Participation Coordinator, East-West Gateway Coordinating Council, St. Louis, Missouri

"A Broad Human Factors Approach to ITS Technologies and Implications for African-Americans," Jose H. Guerrier, Ph.D., Senior Research Scientist, Stein Gerontological Institute, Miami, Florida

10:00 a.m.-10:15 a.m. .... Break

10:15 a.m.-11:45 a.m. .... The Fare Equity Issue

Overview: This session addresses the potential cuts in federal funding to local transit systems and the impact of future fare restructuring strategies for transit systems and minority communities.

Moderator: Deborah Price, Chairperson, Conference on Minority Transportation Officials (COMTO)

"Civil Rights and Fare Equity," Paul Somn, Esq., NAACP Legal Defense Fund

"A Transportation Provider's Dilemma," Sharon Dent, Executive Director, Hillsborough Area Regional Transit

□ Presentation appears in this volume
Agenda (Continued)

12:00 p.m.-2:00 p.m. ..... Luncheon

Introduction of the keynote speaker, Frank Martin, Assistant Director of Rail Operations, Metro-Dade Transit Agency, Florida

- Keynote Address, Gordon J. Linton, Administrator, Federal Transit Administration

2:00 p.m.-3:15 p.m. ...... Environmental Justice in Transportation

Overview: This session presents perspectives on the growing awareness of environmental justice in the transportation field and outlines activities designed to address the issue.

Moderator: Gloria Jeff, Associate Administrator for Policy, Federal Highway Administration (FHWA)

- "Environmental Justice in Transportation," Lee Johnson, Senior Regional Manager, ATE Management and Service Company, Inc.
- "Working in the Community," Michelle DePass, Esq., Executive Director, New York City Environmental Justice Alliance
- "Georgia Transportation Alliance," Lucius McDowell, Community Coordinator, Georgia Transportation Alliance

3:15 p.m.-3:30 p.m. ...... Break

3:30 p.m. ..................... Student Paper Award Presented by Dr. Frank Enty
Recipient: Satyakala Jarugumilli, University of Nevada, Las Vegas

3:45 p.m.-5:00 p.m. ...... Applied Research Findings

Overview: This session is designed to share findings on recent research in the area of minority travel behavior, ongoing research, and lessons learned.

Moderator: Frank Enty, Ph.D., Senior Staff Advisor, Mass Transit Administration of Maryland

- "Research Opportunities," Stephanie Nellons Robinson, Senior Program Officer, Transit Cooperative Research Program, Transportation Research Board (TRB)

Presentation appears in this volume
Agenda (Continued)

5:00 p.m.-8:00 p.m. ...... Reception Tampa Museum of African-American Art

Transportation provided courtesy of
Hillsborough Area Regional Transit Authority (HARTline)

Friday, April 7, 1995

8:30 a.m.-9:00 a.m. ....... Continental Breakfast

9:00 a.m.-10:00 a.m. ...... Greeting Beverly G. Ward, Deputy Director for Operations, CUTR

State Perspectives on the Reauthorization Agenda

"ISTEA II," Bill McCloud, Senior Vice President, ATC/VANCOM

"The State Legislature and Transportation Policy," James T. Hargrett, Senator, State of Florida

10:15 a.m.-11:00 a.m. .... Closing Session

□ "Closing Remarks," Rodney E. Slater, Administrator, Federal Highway Administration (FHWA)

11:00 a.m. ................. Adjourn Beverly G. Ward, Deputy Director for Operations, CUTR

□ Presentation appears in this volume
SYMPOSIUM II ON
AFRICAN-AMERICAN MOBILITY ISSUES
April 5 - 7, 1995
Tampa Marriott Westshore, Tampa, Florida

Speakers

Lorenzo Alexander is Public Transit Office Manager, Florida Department of Transportation, District Two, Lake City, Florida.

Fredalyn M. Frasier is a Research Associate at the Center for Urban Transportation Research at the University of South Florida.

Gary Brosch is Director of the Center for Urban Transportation Research at the University of South Florida in Tampa.

Jose H. Guerrier, Ph.D., is a Senior Research Scientist at the Stein Gerontological Institute in Miami.

A. Shawn Collins is Executive Director of the Volusia County Metropolitan Planning Organization in Daytona Beach, Florida.

James T. Hargrett is a member of the Florida State Senate representing District 21 of Tampa.

Marianne Taylor Crate is the Citizen Participation Coordinator of East-West Gateway Coordinating Council, St. Louis, Missouri.

Eric T. Hill is a Research Associate at the Center for Urban Transportation Research at the University of South Florida.

Sharon Dent is Executive Director of the Hillsborough Area Regional Transit Authority in Tampa.

Satyakala Jarugumilli was a Master's student in the Department of Civil & Environmental Engineering and a research assistant at the Transportation Research Center, University of Nevada, Las Vegas. Ms. Jarugumilli is presently working as a transportation engineer for Rajappan & Meyer Consulting Engineers in San Jose, California.

Michelle DePass, Esq., is the Executive Director of the New York City Environmental Justice Alliance, New York, New York.

Gloria Jeff is Associate Administrator for Policy at the Federal Highway Administration in Washington, D.C.

Frank Enty, Ph.D., is a Senior Staff Advisor at the Mass Transit Administration of Maryland, Baltimore, Maryland.

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Angela Fogle is a Transportation Planner III at Fairfax County Transportation, Fairfax, Virginia.

Lee Johnson is Senior Regional Manager of ATE Management and Service Company, Inc., Cincinnati, Ohio.
Speakers (Continued)

Sylvan C. Jolibois, Jr., Ph.D., is an Assistant Professor of Transportation Engineering at Florida International University in Miami.

Arthur W. Kennedy is a Commissioner with the Florida Transportation Commission and a member of the Advisory Board of the Center for Urban Transportation Research.

Wade Lawson is Director of Planning at the South Jersey Transportation Authority, Atlantic City, New Jersey.

Gordon J. Linton is Administrator of the Federal Transit Administration in Washington, D.C.

Frank Martin is Assistant Director of Rail Operations at Metro-Dade Transit Agency in Miami.

Robert M. Martin, Jr., is a Research Associate at Florida Agricultural and Mechanical University in Tallahassee.

Bill McCloud is Senior Vice President of ATC/VANCOM in Oakbrook Terrace, Illinois.

Lucius McDowell is Community Coordinator at the Georgia Transportation Alliance, Atlanta, Georgia.

Deborah Price is Chairperson of the Conference on Minority Transportation Officials in Washington, D.C.

Stephanie Nellons Robinson is a Senior Program Officer for the Transit Cooperative Research Program of the Transportation Research Board in Washington, D.C.

Rosalyn M. Simon, Ph. D., is Director of ProjectACTION, Washington, D.C.

Rodney E. Slater is Administrator of the Federal Highway Administration in Washington, D.C.

Paul Sonn, Esq., is an attorney for NAACP Legal Defense Fund, New York, New York.

Beverly G. Ward is Deputy Director for Operations at the Center for Urban Transportation Research at the University of South Florida.

Charles A. Wright, Ph.D., P.E., is Director and Professor of Engineering Technology at Florida Agricultural and Mechanical University in Tallahassee.
Good afternoon. My name is Gary Brosch. I am Director of the Center for Urban Transportation Research (CUTR). On behalf of the Florida Department of Transportation and CUTR, I welcome you to the second symposium on African-American Mobility Issues.

In March 1994, CUTR convened its first symposium on African-American mobility issues. It established the first forum in recent times to discuss the special transportation problems and needs of African-Americans. The agenda included:

- presentations on how past and current policies continue to define travel behavior and transportation needs;
- analyses of travel patterns and behavioral characteristics;
- case studies of jitney services and their roles in public transportation;
- contracting opportunities and marketing services; and
- an open panel discussion on ISTEA.

The symposium was attended by more than 60 participants from throughout the United States and the Caribbean. Representatives from the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), state and local governments, and transit agencies, academia, and the private sector were among the attendees.

A survey of participants’ impressions of the symposium showed that participants believed it either met or exceeded their expectations and gave it an overall good rating. Participants also found the symposium to be “educational and informative” and that it should be repeated and expanded.

This year’s symposium builds on the experiences and issues provided in 1994 and serves to continue the discourse on the special transportation needs in the African-American community. It also provides a forum to continue the exchange of ideas and information, and discussion of transportation planning, programming, and policy issues as they relate to the African-American population.

This year’s symposium also is a collaborative effort between CUTR, University of South Florida (USF), FHWA, and the Conference on Black Public Administrators (COMTO). The keynote speaker during tomorrow’s luncheon will be Gordon Linton, Administrator, FTA. On Friday, Rodney Slater, Administrator, FHWA will speak during the closing session.

The timeliness of this year’s symposium is significant. Consider the following changes in society that will have a bearing on mobility in the African-American community.

The efforts by the new Republican Congress to reduce federal funding to local transit systems, which might include significant cuts in operating assistance;

Fare hikes also are becoming an important topic in the transit community. The recent controversy involving the Los Angeles County Metropolitan Transportation Authority’s (MTA) efforts to increase fares may provide an indication of the importance of this issue;

Several policy and program changes at the federal level will have important impacts on the continued mobility of minority communities. What effect will the proposed National Highway System (NHS), which was approved by the House of Representatives by an overwhelming margin and is now
before the Senate, have on Black communities?

Recent analysis of the Nationwide Personnel Transportation Study (NPTS) reveals that trip rates for Blacks have increased faster than for non-Blacks. This analysis also showed that the number of Blacks becoming licensed to drive increased by 27.9 percent from 1983 to 1990, supporting an increasing demand for travel using privately owned vehicles. The increasing growth in travel by Blacks suggests needed funding for transit, roadway, and infrastructure improvements serving Black communities. Greater access to employment opportunities and services within the Black community, or from these communities to suburban locations, is needed in order for this community to prosper economically and socially.

A requirement of the Intermodal Transportation Efficiency Act of 1991 (ISTEA) mandates increased community participation in developing transportation systems. Thus, policy-makers and planners at the state and local levels and in metropolitan planning organizations need to give greater attention to travel demands of Blacks, since they represent a changing and increasing market. This growing market also supports the desire for increased diversity in the composition of decisionmakers in the transportation arena.

How will Blacks and other minorities in the transportation industry be affected by Congressional attempts to repeal Civil Rights legislation and affirmative action programs that prohibit discrimination? What should be the response from the minority community to these activities?

What are the impacts on minority communities from transportation facilities that pollute and disrupt neighborhoods? For example, many transit maintenance and operation facilities, such as garages and terminals, are found in minority neighborhoods. These cause adverse effects on the environment and quality of life for residents. Many Black communities also were disrupted, economically and socially by the development of the interstate highway program in the 1960s and 1970s.

Communication and technology improvements in society will have significant impacts on Blacks and minorities. How will products generated through Intelligent Transportation Systems (ITS) improve or hinder chances for low income and minority groups to prosper or be positioned in mainstream America?

The ISTEA legislation continues to offer opportunities for the inclusion of African-Americans in the transportation decisionmaking process. In economic terms, millions of jobs are still being created from transportation projects and transit continues to serve as a potential employer and a transportation service.

However, these opportunities are being threatened and will not last long. Therefore, it becomes more important to continue the discussion on the issues affecting mobility in African-American communities and to develop an agenda that will address the associated problems for this group.

We invite your input and comments so that the most efficient and equitable transportation system possible can be implemented. Please notice the evaluation form in the package that you received when you registered. At this time, I would like for everyone to complete the first question: "Before the symposium begins, please write a few sentences on what you hope to gain from this symposium." Thank you.
Perspectives on African-American Mobility Issues: Exploring New Frontiers

Charles A. Wright, Ph.D., P.E.,
Department of Engineering Technology
Florida Agricultural and Mechanical in Tallahassee

Introduction

To those who represent the state of Florida, Gary Brosch, Director of CUTF, the African-American Mobility Symposium Steering Committee, we thank you for being here and bringing those warm words of welcome. Eric, Beverly, and Fredalyn, I appreciate this fine opportunity that I have to work with Mr. Kennedy and the other presenters; particularly since Mr. Kennedy is involved in so many transportation activities and is also a renowned Sun Day School superintendent. The superintendent's superintendent. It is a pleasure to serve all of you at this important second symposium dealing with these important issues. Your theme is very challenging; it allows for strengthening of partnerships and networking. The theme is very diverse, futuristic, and will meet the needs of the 21st century - the next 100 years.

I am very pleased to see the diversity of individuals present. You represent the best that the transportation profession has to offer. You represent the commitment to African-American mobility issues. You are talented and committed.

We also have other administrators, like Mr. Rodney Slater, Mr. Gordon Linton and many others, such as Dr. Sylvan Jolibois, Mr. Frank Martin, Mr. Bill McCloud, and Ms. Sheron Bellamy, here who perform collateral mobility responsibilities within the community. All of us working in collaboration, networking, and partnering to make it happen.

Past Activities

It is true that we have had many accomplishments related to transportation and mobility of African-Americans, but it is also true that we have much work to do! To paraphrase Robert Frost, "We have traveled a long way, but we have miles to go . . ."

Please allow me to mention some conditions that place us here today and to talk about transportation in a different way. Clearly, we can talk about the importance of transportation as it relates to our economy, as it relates to our society, and as it relates to our quality of life. However, I also see it in another way. Transportation has been an integral part of the peopling of America because we are a nation of nations with a different agenda from other nations. Oceans and seas were crossed in search of freedom.

To use the words of Administrator Slater, "Transportation is freedom - personal, economic, social, and political - a means of happiness! We may talk about Lady Liberty that stands in the New York harbor and the message it connotes. 'Send me your poor, your tired, your huddled masses, yearning to breathe free.'" However, the transportation route of African-Americans was not voluntary and our past has been wrought with many struggles that related to transportation. If we visit the forts, Elhaino Island, Ghana, and other holding facilities for slaves in West Africa, we can hear the voices of our ancestors.

As you know, most African-Americans were brought to this country as slaves more
It is important that the word be sent forth that African-Americans not only wish to be a part of the rewards of work, but that they also wish to be a part of the work itself."

Past conditions dictated transportation behavior for African-Americans who remained in the rural southeast until specific events transpired:
- The Civil War;
- The Underground Railroad and Harriet Tubman;
- The various inventions: which made necessity truly the mother of invention such as the train hook, traffic light, and so on;
- After the War, Jim Crow;
- The Industrial Revolution;
- Southern segregation that led to Negro communities in the urban North;
- The cutting of single dwellings into multi-dwellings that led to heavy concentrations of African-Americans in these cities;
- After World War II, African-Americans were ready to trade tired souls for freedom, which was not really free.

As noted, our past and current policies continue to defy travel behavior and transportation needs in our communities. From this troubled past, which include battles of Homer Plessy to the Great Migration, it is situationally correct that transportation became the focal point: Rosa Parks — refusing one day to sit in the back of the bus. It further was fitting that the advent of a transportation event brought the Civil Rights movement from the back of pickup trucks to the halls of Congress with more than 300 years of history and that has brought us to today.

Friends and colleagues, what I really wish to underscore is that transportation is not just about steel, concrete, and asphalt. It is about people and their struggle for freedom.

As I have noted, transportation has always played an important role in our Nation's history — not always pleasant for African-Americans, for example from slave ships to the “New Frontier.” Yes, even my own personal experiences relate to transportation. I first looked through a transit when the city paved the streets in front of my house. One look and I was hooked. I dreamed of moving to different places, growing and obtaining a position in a profession usually unthinkable for a person of my hue to invade.

Transportation also is about giving all, inclusive “all,” the opportunity to participate in that arena through education. It is ours to do, yours and mine, those things that ensure opportunities and that make sure that regardless of race or gender or age or nationality or disability, all citizens can sit at the table of abundance and enjoy. But, we also have the responsibility or burden of struggle in moving America forward.

It is important that the word be sent forth that African-Americans not only wish to be a part of the rewards of work, but that they also wish to be a part of the work itself. It is important that you tell the story of those whom you represent, that you help those who know that talent, energy, and commitment are essential to the task at hand, that these individuals to whom you give voice and know how to recognize that it is important — it is that they are as committed, as determined, and as necessary as those at the table.

Issues for Consideration

The issues to be considered are appropriate, current and necessary. The Republican Congress reducing federal funding to local transit systems, which might include significant cuts in operating assistance. Fare hikes are becoming an important topic in the transit community. Policy and program changes at the federal level have important impacts on the continued mobility of communities.

Recent findings of the Nationwide Personal Transportation Study (NPTS) noted that trip rates for Blacks have increased faster than for Non-Blacks. This study showed that the number of Blacks becoming licensed to drive increased by 27.9 percent from 1983 to 1990, supporting an increasing demand for travel using privately owned vehicles. Increasing growth in travel by Blacks suggests needed funding for transit, roadway, and infrastructure improvements serving Black communities. Greater access to employment opportunities and services within the Black community, or
from these communities to suburban locations, is needed in order for this community to prosper economically and socially.

- Requirements of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) mandate increased community participation in developing transportation systems.

- Impact on Blacks and other minorities in the transportation industry of the Congressional attempts to repeal Civil Rights legislation and Affirmative Action programs that prohibit discrimination.

- The impact on minority communities from transportation facilities that pollute and disrupt neighborhoods.

- Significant impact on Blacks and minorities of communication and technology improvements in society. How will products generated through Intelligent Transportation System (ITS) improve or hinder chances for low income and minority groups to prosper or be placed in mainstream America?

**Other Issues to be Addressed**

Congestion pricing should be considered because African-Americans occupy the largest share of transit riders. As noted in "Congestion Pricing: Issues and Opportunities, Implementing Congestion Pricing Winners and Losers" by Patrick De Corta-Souza, advanced planning is a must, because peak pricing exists during higher congestion during times when many African-Americans are on jobs where they are required to work during these periods.

- Florida's need for the National Highway System and its impact.

- Florida's Travel and Tourism Industry and its impact on and potential benefits for African-American.

**We Must Work to Set the Agenda**

The only limitations we have are the limitations we place on ourselves. Our key is not to set the priorities of what is on our agenda, but to place on the agenda our priorities. The Book of James 1:2, "My brethren count it all joy when you fall into divers temptation." We develop faith and wisdom. We have to ask ourselves the fundamental question, "Are we going to stand on the sidelines and perhaps tell the transportation story as a history?" If we only discuss what we hear or read, we will be discussing history. Look about you, this is the first time we all have been together. We need to network and build partnerships. Are we going to be a part of making a significant contribution? The choice is ours.

I invite you, if you would, to rededicate yourselves. Rededicate yourselves to this important task to keep America moving, because it does more than that. As noted before, transportation is about more than just steel, concrete, and asphalt. Our effort helps to keep America free, helps to give all the opportunity to be all we can be as America moves to the next century, and let us, together, explore new frontiers.

"If we only discuss what we hear or read, we will be discussing history."
I would like to thank the Center for Urban Transportation Research (CURTR), Federal Highway Administration (FHWA), Federal Transportation Administration (FTA), Conference of Minority Transportation Officials (COMTO), and the National Forum for Black Public Administrators (NFBPA) for extending me the invitation to speak with you this afternoon regarding the continuing evolution of public transportation policy and its impact on the minority community.

I bring you greetings from the Governor of the State of New Jersey, the South Jersey Transportation Authority and its Board of Commissioners, and the staff of the Authority. I would be extremely remiss in my duties as a member of the Board of Directors of the Greater Atlantic City Chamber of Commerce, if I did not extoll the virtues of Atlantic City, one of the premier gaming resorts of the world, home of the famous Atlantic City Boardwalk, host of the Miss America pageant, and one of the excellent tourist vacation spots on the East Coast. I invite all of you and your families to visit us when you can to enjoy our hospitality, fine beaches, and various attractions in the region.

The Continuing Evolution of Public Transportation Policy

Wade Lawson
Director of Planning and Development
South Jersey Transportation Authority
Atlantic City, New Jersey

The Role of the South Jersey Transportation Authority (SJTA)

The SJTA is responsible for the following transportation services:

- Operation and maintenance of the Atlantic City Expressway, a 44-mile toll road between Atlantic City and Philadelphia;
- Management of more than 334,000 annual casino charter buses bringing approximately 8.5 million annual visitors to Atlantic City;
- Regulation of the casino bus charter services as it relates to the designation of bus routes, bus parking and bus operations in the casinos, and other non-casino destinations;
- Operation of several automobile and bus surface parking lots and a six-story automobile parking facility (825 spaces) with retail space;
- Coordination of the development of various transportation management strategies to facilitate traffic movement in the region;
- Board member of the South Jersey Transportation Planning Organization, the metropolitan planning organization (MPO).

Problem Statement

What effect does minority representation or lack of representation have on the transportation decisionmaking process? How do these policy decisions influence the development and implementation of transportation policies in the minority community?

Background

The transportation industry, as you may know, is a multi-billion dollar industry.
Based on information for the calendar year 1991, total governmental expenditures for transportation services and facilities equaled $105.4 billion.

I have included the financial profile of the transportation industry, shown in Table 1, to provide a perspective of the magnitude of the transportation industry on our national economy.

Table 1. 1991 Transportation Services and Facilities

<table>
<thead>
<tr>
<th>Mode</th>
<th>Dollars Spent (Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways</td>
<td>$76.0</td>
</tr>
<tr>
<td>Airways/Airports</td>
<td>14.0</td>
</tr>
<tr>
<td>Public Transit</td>
<td>9.6</td>
</tr>
<tr>
<td>Rivers/Ports</td>
<td>3.5</td>
</tr>
<tr>
<td>Railroads</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$105.4</strong></td>
</tr>
</tbody>
</table>

Some of you may ask what does this mean with respect to jobs? Based on national statistics, it is fair to say that for every $100 million capital investment in transportation, 5,800 new jobs are created, approximately 600,000 jobs were created nationally as the direct result of capital investment in transportation services and facilities in 1991. (This number does not include the employees that are currently employed in the transportation industry. The public transportation industry alone, based on 1994-95 statistics, employs approximately 302,000 people alone.)

Transportation is one of the most important aspects in our community in that it provides access to employment opportunities that are available at the various employment centers...

"Transportation is one of the most important aspects in our community in that it provides access to employment opportunities that are available at the various employment centers..."
community to affect policy decisions is reduced.);
- lack of minority political control on the appointive process;
- appointments made by other governmental bodies outside the jurisdiction of the local community;

<table>
<thead>
<tr>
<th>Table 2: Transportation and Public Utilities Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: U.S. Department of Labor, 1994</td>
</tr>
<tr>
<td>Total employees                                      8.6 million</td>
</tr>
<tr>
<td>Black                                                 1.193 million</td>
</tr>
<tr>
<td>Executive/Administrative                             1.065 million</td>
</tr>
<tr>
<td>Black                                                  85,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Males  15.8%</td>
</tr>
<tr>
<td>Females      9.5%</td>
</tr>
<tr>
<td>Black Managers 15.8%</td>
</tr>
<tr>
<td>Female Managers 14.4%</td>
</tr>
</tbody>
</table>

- reductions in the number of appointed positions available to local elected officials.
- traditional institutional barriers;
- the insensitivity of the majority community to the needs of the minority community;
- executive level employment opportunities exclude qualified minority candidates (perpetuating the “Good Old Boy” system).

What Happens when Minorities are Under Represented or Not Represented in the Decisionmaking Process?

- Traditionally, transportation services and facilities are oriented to the urban area that also serves as the place of residence of the minority community. These services significantly influence the quality of life, such as air quality, noise pollution, congestion. However, these policy decisions are made by nonresidents.

- Transportation policy and long-term planning decisions regarding fare structures, location of facilities, award of contracts, toll roads and highway alignments, type of services and equipment provided, service reductions, and so on, are made without the input of the minority community. More often, minorities are adversely affected by these decisions.

- Senior executive and policy level employment opportunities for minorities are diminished.

- Minority contractors are not aggressively pursued to participate in procurement opportunities. Because of this practice, employment opportunities for minority community-based businesses decline.

- When operating funds are reduced, transit services are disproportionately cut in the minority community.

- Changes in fare structures and service availability significantly influence the transit-dependent minority community with respect to access to job opportunities, medical, social services, and so on.

Minority Involvement in the Transportation Decisionmaking Process in Atlantic City

- During the tenure of the City’s first minority mayor, the Mayor’s office participated in the selection of the first and only minority executive director of the county transportation authority.

- A representative of the Mayor’s office, the executive director, was selected to serve as a member of the Authority’s Board of Directors.

- Community concerns regarding bus routings and traffic congestion were forwarded directly to the Board.

- Senior staff included minorities and women in decisionmaking positions.

- Minority employees who were primarily concentrated in entry level positions had their salaries upgraded by 15 percent during the first year of the minority executive director’s tenure.
Minority representation in the transportation decision-making process is essential for the development and implementation of various policies and the future growth of a total community.

What Can the Minority Community Do to Gain Representation in the Transportation Decisionmaking Process?

- Identify and prioritize the transportation issues in your community.
- Develop short and long-range strategies;
- Understand the transportation process and the length of time required to implement new initiatives;
- Develop staying power;
- Familiarize community representatives with the transportation decision-making process;
- Identify community residents to monitor the status of various transportation issues and attend transportation authority or MPO meetings;
- Develop coalitions with other minority communities as well as the minority business community;
- Support elected officials who appoint minorities to transportation policy boards and senior executive staff positions.
- Sensitize individuals appointed to policy board and executive management positions to the existing and projected needs of the minority constituents, as well as the total community.
- Maintain regular meetings with elected officials, policy board members and senior staff to familiarize the agency with the various issues affecting transportation in the minority community.

Minority representation in the transportation decisionmaking process is essential for the development and implementation of various policies to improve mobility, job opportunities, economic development, and the future growth of a total community.
Creating An Equal Opportunity Transportation System

Angela Fogle
Transportation Planner III
Fairfax County Transportation, Virginia

Last year while examining the travel and commuting trends identified in the 1990 Nationwide Personal Transportation Survey, I noted that despite the current transportation and air quality problems experienced in this country, the use of single occupant vehicles continues to rise, and there is a decline in the usage of other modes. However, studies such as these seem to neglect to explore the impact of such trends on the people without vehicles. In reflecting on what originally sparked my interest in the transportation planning field, I recalled that during my original investigation of transportation related issues, I discovered that very little information existed that explored or researched at a national level how to design transportation systems that serve the needs of the transportation disadvantaged, specifically women and minorities. From that point on, I was on a mission.

This paper examines the impact the passage of Intermodal Surface Transportation Efficiency Act (ISTEA) has had over the past three and one-half years, historic appointments to the United States Department of Transportation (USDOT) by the Clinton Administration, and the potential for increased opportunities for transit. In discussing the future, I will discuss the impact of the new Republican Congress on transportation, specifically public transportation. I will briefly provide my perspective on the impact the information superhighway will have on the minority community and provide recommendations for improving the current transportation picture.

The automobile has been touted as a means of freedom and flexibility in people's lives, but many people do not have safe, convenient access to a car or other reliable means of transportation. Transportation access is crucial to decisions such as where an individual will live or work and it can have a profound impact on the quality of life. Most of the captive riders using mass transportation systems are the economically disadvantaged, the physically challenged, women, the elderly, and minorities.

Over the past 30 years, transportation and land use planning have closely followed two major events that occurred in major metropolitan areas: the relocation of whites to the suburbs and the construction of the interstate system. Since 1950, more than 85 percent of national population growth has occurred in suburban areas. Currently 44 percent of America lives in suburbs surrounding the central cities of large metropolitan regions (Pisarski, 25). Transportation systems within major metropolitan areas over this 30-year period were designed to meet the commuting needs of those fleeing the central cities. For example, in Baltimore, Chicago, Cleveland, and Detroit, whites made up as much as two-thirds of the central city population in 1960. Census population data suggested that while whites made up 82.2 percent of the central city population in urban areas in 1960, by 1990 whites made up less than 15 percent of many central city populations in urban areas. During that same period, the nonwhite population in many central cities of major metropolitan areas more than doubled.

Women and minorities make up a small percentage of engineers and planners in this country, although they represent most of the transportation users. A 1991 American
The Nationwide Personal Transportation Survey (NPTS) results suggested that African-Americans and Hispanics represent the largest group of those who walk or use transit for work trips. In addition, women represent 26 percent of professional planners, while minorities represent only 3 percent of all planners (Lewis, 13). An examination of the existing transportation systems in many major metropolitan areas in America as they relate to population, housing, and employment trends, infers that ethnic and gender disparities within engineering and planning fields have had a negative impact on transportation decisionmaking in this country.

Millions of research dollars have been spent analyzing transportation trends in America. Historically, transportation models used to forecast travel trends have represented the travel patterns of white males. Therefore, despite the dramatic shift in the demography of major metropolitan areas, when reports on commuter travel trends are updated to determine future transportation needs, the data continues to represent the travel patterns of white males. Transportation data, and more specifically, mass transportation data should be designed to consider the travel behavior of a broader spectrum of the general public.

Many consider the passage of ISTEA to represent the beginning of a new era in transportation decisionmaking, due to the Act's provision of greater opportunities for public involvement. The Federal Transit Administration (FTA) and Federal Highway Administration (FHWA) jointly developed metropolitan and statewide planning rules and regulations to guide the development of transportation plans and programs under ISTEA. The regulations require greater opportunities for non-traditional participants to provide meaningful input during the transportation decisionmaking process. Non-traditional participants include such groups as the railroad and trucking industry, environmental groups, businesses, minorities, and the elderly.

In order for this new legislation to influence the transportation disadvantaged, however, a great deal more than opportunities to provide input during the process is necessary. Transportation decisionmakers must design transportation systems that provide safe and affordable access to socioeconomic basics such as housing and employment opportunities.

Unfortunately, state departments of transportation, which are predominantly composed of white males, continue to control the decisions concerning the design and construction of transportation systems in this country. Therefore, existing transportation systems represent the travel needs of white males.

The American Public Transit Association's (APTA) "Access to Opportunity: Linking Inner City Workers to Suburban Jobs" report suggested that federal investment in highways has been four to five times higher than investment in transit. Over the past forty years, two out of every three new jobs created have been in the suburbs.

The Nationwide Personal Transportation Survey (NPTS) results suggested that African-Americans and Hispanics represent the largest group of those who walk or use transit for work trips. It was determined that those who live on the worst housing are more likely to walk or use transit. During his testimony at the 1994 Congressional Black Caucus Transportation Braintrust, Federal Transit Administrator Gordon Linton stated that African-Americans comprise approximately 11 percent of the population and represent 33 percent of transit riders. Hispanics represent 8 percent of the population and approximately 16 percent of public transportation riders. Whites make up 70 percent of the population and 44 percent of users of public transportation. Mr. Linton also emphasized the fact that transportation is a vital link to opportunity.

Recommendations

After giving a great deal of consideration to the many issues I have raised, I considered these options (Unfortunately, my solutions to these problems are not very original):

- Push for radical changes in DOT funding. If this does not occur before reauthorization, then ISTEA is in danger;
- There is great opportunity to link minorities with environmentalists because in a sense their goals are the same: control
growth, preserve existing infrastructures, and make jobs more accessible to people;

☐ Make careers in planning and engineering fields seem more rewarding to our youth, such as school children and inner city programs;

☐ Teach children about planning. The Louisiana APA Chapter has a one week camp for teens.

☐ A short-term bandage is to increase reverse commuting opportunities that will link inner-city workers to suburban jobs. Meanwhile, land use and growth control measures must be examined. (In the current political climate, realistically, I do not anticipate a great deal of support for this option);

☐ Minorities must increase their knowledge of what is at stake with the information superhighway.

Under the Clinton Administration, reverse commuting is being promoted again. Southwestern Metro Transit Commission (SMTC), Eden Prairie, Minnesota, is an example of a transit agency committed to reverse commuting opportunities. The agency covers three suburban communities in the Minneapolis-St. Paul area. With a small service area, population of 70,000, SMTC operates 15 express trips with a 10-vehicle, demand-responsive paratransit system and a four-bus shuttle system that connects to the regional transit system. The system-wide ridership of 275,000 is anticipated to double. The system has had a ridership increase between 20 and 25 percent each year with no marketing necessary. In 1992, 200 one-way reverse commute routes were provided; nine months later, 5,578 one-way trips were provided.

Reverse commute funds come directly from a small tax assessed to homeowners and businesses in each community and go to the regional transit authority. Ninety percent of funds collected goes back to SMTC. The transit agency receives no state or federal funds.

SMTC sponsored a job fair at a suburban mall. Initially, 50 companies participated. Out of the 400 people there, approximately 150 people were hired for full-time permanent positions with full benefit packages. SMTC has already drawn interest from 100 employers for the next job fair.

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The Future

The Information Superhighway

According to the May 1994 issue of Black Enterprise, the FCC announced plans to auction 4,000 personal communication service licenses (PCSs). PCSs represent wireless, non-cellular systems designed for computers, cordless telephones, faxes, and pagers.

According to the June 1994 issue of Jet magazine, the Information Superhighway is filled with road blocks for minorities and women. Andrew Barrett, Commissioner of the FCC feels that taking advantage of the information superhighway may be too expensive for minority-owned firms. It is difficult for minority businesses to get bank loans to develop properties, such as dividing the airwaves for wireless communication services. Of the approximately $800 million in bids received by minority companies, many defaulted on their payments due to financial difficulties. Mr. Barrett said that "many large players in the telecommunication industry will bid on the spectrum to block any participation by women and minorities on the information superhighway."

An article in Business Week magazine suggested that in 1978, only 0.5 percent of the 10,000 broadcast properties were owned by minorities. In 1995, only 2.9 percent are owned by minorities. Congress recently voted to eliminate the minority tax break citing abuse by big companies using small minority businesses as fronts. The VIACOM deal was one specific example where Frank Washington owned only 20 percent of the company, but VIACOM stood to gain $600 million in tax breaks.

Interestingly, the article seemed to look only at abuses and not at success stories in areas where minorities were locked out. The Granite Broadcasting Group is an example of how the program could work positively. Granite sales are skyrocketing and shares are very high. The company continues to acquire new stations.

According to an article entitled "Technological Bypass: Getting Around the Information Superhighway Roadblocks" by
Reginald Stuart in *Emerge* magazine, just as with the interstate highway "Black Americans risk being roadkill on the information superhighway." There is a need for technologically literate children in minority communities because the potential for separating the haves and the have-nots is great. The information superhighway has the potential through the Internet to connect homes, businesses, work places, schools, and so on. It opens many opportunities for computer users. The Bureau of Census data on computer use identified the following trends in 1989:

At home, 26 percent of white children, ages three to 17, use computers, while 8.4 percent of black children and 28.1 percent of other race children use computers. Of those persons 18 and older, 18.3 percent of whites use computers, 8.4 percent of blacks and 20.9 percent of other races. At school, 48.2 percent of white students, 27.6 percent of black students, and 43.6 percent of other race students use computers. (Note: most minority schools do not have computers.) On the job, 48.2 percent of whites, 27.6 percent of blacks, and 36.4 percent other races use computers.

**How Transit Is Faring in the Funding Area**

In the new Congress, it appears that many Republicans view mass transportation as another social program, therefore eligible to be cut or eliminated in the future. They continue, like many, to overlook the hidden costs of driving. New budget proposals by Republicans all support cuts to transit and other social programs. They push toward privatization by forcing states to be responsible for providing transportation. Obviously, they would have to seek assistance from the private sector.

The new Republican governor of New York, Pintaki, immediately pressured MTA to eliminate subway and bus service rather than raise fares. Under the MTA Board’s plan, express bus service has been eliminated, subway shuttle hours have been eliminated, and some stations are being closed. These types of cuts often push people back to their cars and cause others to lose their jobs. Public transportation for school kids is also affected.

**Impact of the New Republican Congress on ISTEA and Other Transportation Related Issues**

The National Governor’s Association’s (NGA) full scale attack on the Clean Air Act has been very successful, thus far. The Republicans have managed to require the Environmental Protection Agency (EPA) to scale back the required enhanced Inspection and Maintenance (I/M) programs and efforts are underway to abolish mandatory employee commute options (ECO) programs. Earlier this month, members of the NGA met with the EPA to discuss playing a greater role in revising or modifying transportation conformity requirements. The NGA would like to reevaluate the Clean Air Act Amendments (CAAA), specifically the transportation conformity portion.

A closer examination of the impact of revamping the conformity requirements identifies several obvious factors. Conformity requirements are viewed as a threat because they require state and local governments to explore options other than laying down more pavement. It recommends controlling sprawl, encourages revitalization of downtown areas where the infrastructure already exists and transportation access is not reliant on the automobile, and has meant reexamining reverse commuting. When Congress enforced efforts to promote clean air by enacting the Clean Air Act Amendments and ISTEA, they were not fully aware of the impacts.

**Nation Highway System (NHS) vs. National Transit System (NTS)**

NHS is still under consideration, NTS appears to be no longer under consideration. The year 1992 brought minorities and women greater opportunities for advancement with Clinton’s historic appointments to the USDOT. In order for the goals of ISTEA to be met, political pressure must be exerted to ensure the state DOTs, MPOs, and local planning agencies develop transportation plans and programs that ad-
equately serve all Americans. Minority leaders need to become more involved in transportation related issues because transportation can be used as a tool to improve the social and economic conditions of their constituents. The statewide and metropolitan planning regulations suggest that within metropolitan areas, to ensure that the needs of all citizens are met, “...the personal involvement of central city elected officials in the planning process will be a significant factor in determining whether their priorities are included in metropolitan transportation plans and programs. Their involvement also provides a mechanism for ensuring that central city issues, such as, access to jobs and affordable housing, reverse commute concerns, and economic stimulation through redevelopment or mobility projects, are addressed (23 CFR Part 450.300).”

It is important that elected officials acknowledge the linkages between transportation access, poor quality of housing, and the high unemployment rates in their areas. The next step for elected officials is to become familiar with the new legislation and determine how funds can be used to “empower” their communities.

Minorities must seek key roles as stakeholders in the transportation decisionmaking process in order for their transportation needs to be represented. Efforts should be directed toward developing strong outreach programs designed to increase minority representation on MPO Boards and serving on influential transportation, technical, and policy committees.

Closing

It is an honor to be invited to participate as a panelist at this event. When I received the final agenda and noted the many distinguished speakers who would be participating, I felt a bit overwhelmed; perhaps slightly intimidated. During graduate school and my early years as a planner, I have had the opportunity more than once to hear many of them speak. I only hope as I progress as a planner, I can serve as an example to others in the same manner as my peers have served as an example to me. I challenge all present to reexamine the role we can play as planners and engineers. We must consider how to implement policies and plans that will improve transportation accessibility for the transportation disadvantaged in our communities and regions. Often it is observed that providing access has been overlooked. This is not done intentionally, but simply because those persons designing the system neglect to consider people who are not “like them.”
Transportation Redefined

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Background

For many residents living in the urban core of the St. Louis metropolitan region, access to employment and other opportunities has been limited by several factors. These include, but are not limited to, a lack of personal transportation, land use and development patterns, and shifts in employment from manufacturing to service sector jobs. These are the barriers that individuals and communities must overcome to become self-sufficient and sustainable.

Propelled by the tough questions and choices proposed by the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, the East-West Gateway Coordinating Council began the development of a new planning process in which members of four agency departments were brought together with several citizens and professional stakeholder groups to develop a new way of doing business. This process, entitled “Transportation Redefined,” refocused transportation decisionmaking on the specific needs and experiences of the transportation customer. It focused on seven, broad regional goals:

- resource conservation;
- access to opportunity;
- congestion mitigation;
- goods management;
- safety;
- sustainable development; and
- preservation of the infrastructure.

Disparities in the Region

Problems associated with immobility are most often invisible to those residents who travel freely and independently around the St. Louis metropolitan region. However, an old car that will not start, a transit trip that is too long, a childcare center three blocks off the bus line, a van without a lift, and bus service that ends before the night shift is over are all “little” things that can present enormous obstacles to the individuals and families who experience them. While these problems manifest themselves at the local community level, they are a part of a broad regional dynamic.

At the close of the World War II, the St. Louis area was the eighth largest city in the United States with a population of more than 850,000 people and population density of 14,000 persons per square mile. Forty-eight percent of the region’s population was in the City of the St. Louis, 65 percent of the businesses, and more than half of the region’s jobs were there. Today, however, the picture is very different.
St. Louis is a region of nearly 4,500 square miles whose assets are geographically dispersed, but well-connected by an expansive roadway system. According to the 1990 Census, the metropolitan area is the 17th largest in the United States with a population of 2.4 million people. Developed land in the St. Louis metropolitan region increased by 355 percent, with the largest rates of increases occurring to the west and northwest of the center.

Between 1950 and 1990, the City of St. Louis along with 13 other smaller municipalities that border the city, lost more than half its population. Twenty percent of the region's population lives in these communities but make up 50 percent of the region's poverty. Most of these areas are more than 90 percent African-American. Residents of these communities are more than twice as likely to be unemployed as those in other parts of the region. They live in households that are nearly seven times as likely not to have a private vehicle, yet less than 50 percent of the region's jobs are accessible by public transit. Higher portions of youth, older persons, and persons with disabilities live in most of these communities as well. Concerned that the continuation of suburban development patterns without complementary investments in the social and physical infrastructure of the inner cities may result in further deterioration of the urban core and a widening of the economic gap that already exists, the Council began to refocus its planning efforts.

**Community Mobility Market Analysis Planning: What is it?**

In 1994, the Council developed and began implementation of an ambitious community planning initiative to engage residents of the St. Louis metropolitan region in the transportation decisionmaking process. This initiative, entitled "Community Mobility Market Analysis Planning," is being replicated and integrated throughout the daily transportation planning activities of the Council.

Community Mobility Market Analysis planning was designed to ensure a reasonable range of mobility choices for all citizens of the region. Its primary focus is to improve access to employment and other opportunities for residents of inner-city communities who have not been well-served by the transportation system in the past. Community Mobility Market planning targets areas in which the unemployment rate is at least twice as high as the entire region. It calls for community residents and regional planners to work together to assess the transportation and other mobility needs of selected communities and establish a set of short-term milestones. These milestones will be used to gauge progress toward long-term objectives. This planning process is grounded in an asset-based approach and uses the wealth of resources found within communities to overcome the effects of poverty.

**Description of the St. Louis Region's Community Mobility Market Area**

The Community Mobility Market Analysis Area for the St. Louis metropolitan region has been divided into two study areas, one in Missouri and the other in Illinois. These areas are inner city areas with relatively high levels of unemployment. The first mobility market area, found in Missouri, comprises the northwestern portions of the City of St. Louis and neighboring northeastern portions of St. Louis County. These are older, well-developed areas that have been losing population and employment since 1950. The 1990 population for this area was approximately 82,400. Less than two-thirds, 61 percent, of the residents are adults of working age. The unemployment rate of 11.6 percent compared with the regional rate of 6.4 percent. Fifty-five percent of those unemployed and looking for work were men and 45 percent were women. Although the initial area was defined by clustering census tracts, when the area was redefined by municipal boundaries, more relevant from a community viewpoint, portions of 13 discrete municipalities were included.
Unlike the first mobility market study area, the second study area comprised only of the City of East St Louis. This city has a broad geographic area, 14.4 square miles, but a population of only 40,944 that is half the size of the Missouri portion of the mobility market area. Between 1980 and 1990, the city has experienced a 26-percent loss in population. Fifty-nine percent of the City residents are adults of working age. The unemployment rate in the City in 1990 was 24.6 percent, almost four times that of the region as a whole. Only 3,559 adults of working age are listed as unemployed; 14,316 people, aged 16 and older are not in the labor force and not counted in the unemployment figures.

There is an enormous level of economic disparity between these two communities and the region. This level of disparity reflects the negative side of the movement of jobs and middle to upper income households into suburban areas. It also suggests that the current transportation system is not fully supporting the economic and social needs of the population left in the region’s core.

**Steps in the Community Mobility Market Planning Process**

Once a geographic area has been defined, the planning process consists of the following steps. These steps do not have to be completed in sequential order. However, each component is necessary for effective implementation.

**STEP 1 IDENTIFY A COMMUNITY MOBILITY ADVISORY GROUP**

The group identified should be a broad-based group with representatives from all the relevant stakeholders in the mobility market area. It can be an existing community-based group or a newly formed group convened solely for this purpose. The Advisory Group will have the following five primary functions:

- to ensure that all relevant information about the area is taken into account;
- to ensure that the strategies considered and selected are implementable and appropriate;
- to find ways to coordinate transportation improvements with other investments in the area;
- to monitor and evaluate strategy implementation; and
- to act as advocates for the needs of mobility-disadvantaged persons in the regional planning process.

**STEP 2 CHARACTERIZE IMPEDIMENTS TO ACCESS**

In this step, mobility impediments of the area are documented. “Mobility impediments” may refer to a range of characteristics, including: private vehicle ownership rates, educational attainment rates, inadequate public transportation service, poorly maintained facilities, distance from major employment or service centers, crime rates, structural barriers at transportation facilities, lack of information about how to use public transportation, absence of child care or other support services accessible by existing transportation modes.

“This level of disparity... suggests that the current transportation system is not fully supporting the economic and social needs of the population left in the region’s core.”

**STEP 3 CLARIFY MOBILITY OBJECTIVES**

This step calls upon the Advisory Group to clarify as well as validate the identified mobility goals and objectives to which community mobility strategies will be applied. "Mobility objectives" are aspects of economic and social access that can be supported by transportation and other mobility-related objectives. For example, improved employment rates in the market area is a mobility goal that can be supported by the mobility objective of increasing the number of home-to-work trips from the mobility market area to suburban employment centers.

**STEP 4 IDENTIFY ORIGIN AND DESTINATION POINTS**

In this step, origin and destination points are determined. These points are defined by the community. They can be
points within or outside the mobility market area and can refer to residential, service, or employment centers.

**STEP 5 INVENTORY COMMUNITY CAPACITY**

The inventory of the community's infrastructure, is the most important step in this entire community planning process because it focuses on assets rather than deficits. These assets are multidimensional and include those at the neighborhood, community, and regional levels. For purposes of this study, we modified and adopted a community capacity assessment tool developed by John McKnight and associates at Northwestern University's Center for Urban Affairs and Policy Research. This tool considers three levels of assets available for potential community improvement. They are a community's:

- primary building blocks (assets and capacities found inside a neighborhood and largely controlled by the neighborhood);
- secondary building blocks (assets found within the community but largely controlled by outsiders); and
- potential building blocks (resources originating outside the neighborhood and controlled by outsiders).

A few examples of each of these building blocks from a community mobility standpoint are as follows:

**Primary building blocks for mobility:**
- residents with autos who are willing to provide rides to neighbors;
- neighborhood-based carpool or rideshare programs;
- existing information and communication channels connecting mobility disadvantages with persons in the community.

**Secondary building blocks for mobility** include:
- existing transit and paratransit service in the community;
- light rail service through or stopping in the neighborhood;
- existing or planned transportation facilities or improvements in the community;
- community reinvestment banks serving the community.

**Potential building blocks for mobility:**
- local, state and federal transportation funds for which projects in the community may be eligible;
- employers outside the neighborhood who might provide transportation subsidies or services;
- transit or paratransit service currently available outside the community that could be expanded into the community.

**STEP 6 IDENTIFY POTENTIAL IMPROVEMENT STRATEGIES**

This step is often the most difficult step in the planning process because some of the strategies to be implemented go beyond traditional transportation improvements. The criteria used to identify potential community mobility markets often suggests that they will include the transportation system as well as the human service system, the area economy, educational system and others. The ability to connect aspects of these various systems at the neighborhood, community, and regional levels becomes crucial.

**STEP 7 SELECT THE PREFERRED STRATEGY(IES)**

The seventh step in the community mobility market planning process is to select the preferred strategy. Selections are evaluated by using techniques of cost-benefit analysis specifically developed for mobility market purposes. The community also is actively involved in the selection process by helping to determine whether the preferred strategies are appropriate and can be carried out.

**STEP 8 CONSTRUCT THE ACTION PLAN**

In this step, an action plan is constructed in cooperation and collaboration with the Advisory Group. The plan should include these elements:

- the selected strategy or package of strategies;
- delineation of roles and responsibilities of lead agencies, organizations, or in-
stitutions who will be responsible for the plan’s implementation;
- a financial plan;
- a community education and communication strategy; and
- an evaluation plan which includes a pre and post assessment of short and long-term performance measures.

STEP 9 SECURE FUNDING

The final step in the analysis of the community mobility market planning process is to secure funds for implementation. For the transportation elements, this may mean submission of the project for programming on the transportation improvement plan (TIP), consideration of other federal enhancement funds, or other sources of public or private funds.

The Implementation Phase: What’s Happened?

Since the implementation of this innovative community-oriented planning process, several important lessons have been learned. A few examples of those ways in which we have attempted to address some of them are as follows:

1. Economic and socially distressed communities are wary of “outsiders” — especially governmental or quasi-governmental agencies, as the Council is perceived to be — coming into their communities bearing the “We Are Here to Help” banner.

The Council is not absolutely sure how to address this concern effectively. However, it has made a commitment to continuously engage residents of these communities in the planning process by closely working with institutional and neighborhood partners who are respected and trusted in the community.

2. Planning is a long-term process, undertaken to address long-standing problems or issues, and involves many players in the community. The process needs to be flexible and to allow for relevant stakeholders to flow in and out.

3. Transportation is such a broad issue and means different things to different people. Most people do not understand how transportation planning takes place at the community level.

To address this issue, the Council is in the process of developing several information guides. These guides are designed to educate people not only about the transportation planning process but how to access the transit system. Such a guide, currently being developed for this purpose, is the transit users’ guide. The guide is designed to provide users with information on employment related services and how they can be accessed by those parts of the current transit system connected by light rail. It is called “Link-Up to Success.”

4. Getting people involved in the transportation decisionmaking process requires constantly educating people about the issue. A series of community education forums in the City of St Louis is being developed as a response to this concern. These forums are designed to focus on how decisions are made about transportation in a community and specific ways in which residents can be involved in identifying problems and promoting strategies for improvement. A guidebook, entitled “Get Connected: A Citizens Guide to Community Involvement,” is being developed to complement these sessions.

5. A well thought-out community planning initiative is only as good as its dissemination mechanism. In addressing this issue, the Council has developed several transportation newsletters and began collaborating with many non-traditional transportation partners to educate people about transportation as a critical element in community revitalization and economic development. This mechanism also is used to disseminate information about the transportation decisionmaking process.

6. A planning process that is too long and requires too much time before the group begins to see some results is a process that is bound to fail.

7. Most people think of transportation in a vacuum and do not see that transportation can be used to revitalize and stabilize communities.

“Most people think of transportation in a vacuum and do not see that transportation can be used to revitalize and stabilize communities.”
the Missouri Department of Social Services, the Urban League of Metropolitan St. Louis, the Bi-State Development Agency, and the Economic Council of St. Louis to develop a project design for a four-year initiative to link inner-city residents to suburban job opportunities. This initiative, entitled "Bridges to Work," is part of a national demonstration project designed to measure the extent to which a well-designed transportation-support service program can keep inner-city residents employed and by that stabilize both families and communities.

**Continuing Challenges**

Although we feel this way of doing business has allowed us to embrace the spirit of ISTE A fully, there still are many continuing challenges. These include:

1. Coordinating the goals and objectives of all the relevant stakeholders in a constantly changing political leadership structure.
2. Getting people involved in areas they have not participated in the past, like transportation planning.
3. Getting systems to work together to affect change is difficult. Systems are designed to maintain themselves. Working together is often a foreign concept and no one likes changes in the "way things have always been done."
4. Getting people to understand that transportation is a critical element in revitalizing and stabilizing communities.
A Broad Human Factors Approach to Intelligent Transportation System (ITS) Technologies and Implications for African-Americans

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Abstract
In order for the Intelligent Travel System (ITS) to benefit its potential users, the characteristics of these users that are relevant to the effective utilization of ITS must impact the design and deployment of the technologies. African-Americans, in general, and African-American elderly, in particular, may be at risk of becoming marginalized as users of ITS unless ITS technologies are made accessible to them. This presentation discusses some of the issues that need to be examined to fulfill the promise of ITS for African-Americans.

As we approach the 21st century, the reality of ITS looms closer. ITS and its related technologies promise to facilitate travel for drivers, users of public transportation, and pedestrians through safer, more efficient, and cost-effective means. However, beyond the engineering progress that is crucial to such development, the proper assessment of the end user is one of the most important considerations for the implementation of a system that will function as designed.

One method that permits an effective assessment of the end user is the Human Factors approach. “Human Factors” refers to a body of knowledge and methods applied to the design of objects and environments used by humans. Its major objective is to facilitate the use of objects and environments by the individuals for whom these were designed. The Human Factors approach conceptualizes the person, the object(s) and the environment(s) with which the person interacts as three components of a system. It follows that any change in one component will affect the others.

In the Human Factors scheme, the person consists of a set of characteristics deemed relevant to their performance with an object in a specific environment. These characteristics may include cognitive, perceptual or sensory, and physical capabilities. The object(s) and the environment consists of a set of demands that are imposed on the user. These demands may include actions that must be performed to accomplish specific tasks. These demands may require expenditure of cognitive, physical, sensory resources or capabilities. It is posited that mismatches between the user’s capabilities and the environment’s demands may result in a poor performance at best; at worst, injury or death.

A Human Factors analysis poses three questions: What are the tasks to be accomplished? What are the characteristics of the person who will accomplish these tasks? How will these tasks be accomplished?

The identification of the characteristics of the purported user that are relevant to the system will permit the development of hardware and software that are easy to use. A description of the steps follows.

WHAT NEEDS TO BE ACCOMPLISHED?

A multitude of options will exist under ITS depending on the needs of the traveler.
For the traveler — the driver or user of public transportation — these options may include the following:

- Pre-Trip Travel Information to obtain information regarding road conditions, delays, suggested alternate routes;
- En Route Guidance that may consist of navigational information as graphic displays such as maps, written display on a television or computer monitor, or spoken information;
- En route Transit Information will most likely be available to users of public transportation or pedestrians. It may include transfer points, destinations, and so on.

**Who will accomplish these tasks?**

As mentioned above, certain characteristics of the user will be relevant to access and use of ITS technologies. These may include:

- Anthropometric or Biomechanical information such as a person's height, weight, the amount of force that can be exerted to perform an action, and the speed with which that action can be performed. For instance, specific health conditions, such as arthritis or Parkinson's disease, can affect biomechanical capabilities of a person. These conditions might impact the use of a keyboard, telephone keypad, or other activities requiring fine motor skills.

- Perceptual or Sensory refers to visual, auditory, and tactile capabilities. One or all these capabilities will be involved in practically any interaction with ITS technologies. Therefore, performance will depend on the capabilities of the individual in that domain and the extent to which the technology taps that resource. For instance, the visual acuity of a traveler will have great impact on the way he or she receives information on a computer monitor or on a variable message sign.

- Cognitive capabilities may include such domains as information processing and memory. Using the example of information displayed on a computer monitor or a variable message sign, the speed at which a person can perceive, understand, and act upon information received via these media will depend upon their cognitive processing abilities. While there are individual differences in the ways people process information, such factors as diseases may critically affect these capabilities.

- Socioeconomic Status, although not usually a concern of Human Factors, but rather of marketing, is another characteristic that needs to be brought to the forefront of relevant characteristics that impact upon access and use of technologies is socioeconomic status. Specifically, the financial resources of the end user will impact his or her access and, thus extend the use of a specific technology.

**How will the tasks be accomplished?**

Current projections as to the technologies that will be used to acquire ITS related information include the following:

- cable television;
- personal computer, keyboards, touch screens, voice activation
- Global Positioning Systems (GPS), keyboards, touch screens, voice activation;
- personal digital assistant, keyboards, touch screens, voice activation;
- telephones, digital pads, voice activation.

The devices used and the actions required to operate each of these technologies to obtain desired information will interact with the individual's capabilities and, thus, may affect performance.

**Who Will be the Users of ITS?**

As ITS technologies are being developed and deployed, are the characteristics of Americans who will use these technologies taken into consideration? For instance, the data show that the U.S. population is getting older. It has been estimated that the median age of the population will be 43 by the year 2050. Currently, persons 65 and older make up 12.5 percent of the population of the U.S. By the year 2050, it is estimated that they will make up more than 22 percent of the population. Currently, persons 85 and older are the fastest growing segment of the population. African-American elderly, who currently represent 8 per-
cent of the elderly population, will make up 14 percent of that group by 2050.

**Why Focus on the Elderly?**

Age related changes in people will have some impact upon the use of the hardware and software that will be used to access ITS information. For instance, it has been well documented that aging is correlated with diminished perceptual sensory capability, visual acuity, slower reaction time, general slowing of cognitive capabilities, such as information processing and memory, diminished range of motion, and increased functional limitations. For example, 32 percent of persons 65 or older have a mobility limitation compared with 8 percent of those persons 16 to 64. Rates of functional limitations are highest among those with low income, and not surprisingly, African-Americans in general, and African-American women in particular, have the highest rates of functional limitations among the elderly. To wit, 74 percent to 84 percent of African-American women sixty-five and older had one or more limitations compared with 62 to 76 percent of African-American men, 58 percent to 62 percent of white women, and 50 percent to 54 percent of white men. Rates of chronic illness are also higher between women and African-Americans. Two out of three African-American women reported suffering from arthritis.

The focus on the elderly as the baseline that should be used designing ITS technologies are particularly important since some of the age related changes mentioned above will have serious impact upon use of these technologies. Evidently, if the current trends remain, the African-American elderly are likely to be most affected since he or she has a greater probability to suffer from functional limitations than his or her white counterparts.

Technologies that assist in en-route navigation, such as the Global Positioning Systems (GPS), are currently available. However, much work is needed to determine their usefulness. A recent study of four methods for entering the destination into a route guidance system found that the interface design had a significant effect on the destination entry time (Paelke, 1993). The age of the driver also significantly affected destination entry time with older drivers taking 21 percent longer to enter the destination than younger drivers. The nature of the entry, street names versus numbered streets, was affected by the type of interface used. Older drivers had greater difficulty using one interface, the scrolling option, compared with younger drivers. Older drivers also had greater difficulty keeping their lane position when using a QWERTY keyboard as opposed to other interfaces, such as doublepress, phonepad, or scrolling List. This was attributed to the smaller and more numerous buttons on the QWERTY keyboard compared with the other interfaces.

Likewise, an investigation of the use of car phones by younger persons, those under age 35, and older drivers, persons over age 60, under simulated driving, showed consistently faster performance by younger persons under both manual and voice-activated conditions (Serafin, Wen, Paelke, and Green, 1993).

As illustrated by the above examples, there is a need to include the relevant characteristics of elderly consumers in the development of technologies. This will not only address the needs of our changing demographics over time, but also by facilitating older users, will benefit more of us as well.

**Socioeconomic Status and Access to ITS Technologies**

While the age related changes mentioned above are also applicable to elderly African-Americans, conditions may more likely be found among African-Americans, in general, and elderly African-Americans in particular, that are also relevant to access, such as acquisition of hardware and software that will enable one to gain ITS information, to ITS related technologies, namely socioeconomic status. African-Americans are among the poorest in the nation; in fact the 1990 Census reports that 32 percent of African-Americans live below the poverty level while 34 percent of elderly African-Americans live below the poverty level compared with 10 percent of eld-
...as long as the elderly can drive, walk, or use public transportation, they also will be potential users of ITS technologies.

The rate of poverty is higher for African-Americans living in rural areas compared with urban dwellers, 44 percent and 33 percent, respectively. Although many ITS related technologies may not impose a direct cost on their users, especially those who walk or use public transportation due to transit information centers, kiosks, and so on, much of this technology will impose a direct financial burden on drivers who wish to avail themselves of this technology.

Recent projections by Federal Highway contractors directly involved in the development of the architecture for a Nationwide Intelligent Transportation System estimated that the consumer will bear about 84 percent of the cost of ITS operation and maintenance through personal travel support systems, while government costs will be less than 10 percent. The personal travel system will include personal computer desktop units, portable units such as personal digital assistants, smart cards, and in-vehicle ITS related equipment, such as GPS, two-way communication to premium services, travel planning software, and computer displays.

The cost per individual is estimated to range from $175 for very basic service to $2,000 for a one-time cost for installation of hardware and software. As can be surmised, the higher the cost, the more extensive the services. Other monthly service fees may also be levied depending on the extent of services. These costs may appear relatively modest to most of us, however, for a person living on a fixed income of about $5,200 to $6,000 per year, which is the income of about 50 percent of elderly African-American women age 65 and older, these costs are substantial.

While the elderly continue to have mobility needs and must satisfy these to carry out basic activities such as shopping, banking, going to the physician, and socializing, they often have fewer mobility options than their younger counterparts because of the age-related changes already mentioned. The data has shown that older persons are heavily dependent upon the private automobile either as driver or passenger and perform 80 percent or more of their transportation-related activities via private automobiles (Rosenbloom, 1988). This is particularly crucial for the rural elderly who have fewer transportation options than their urban counterparts. At a recent conference on mobility issues of older persons, older persons living in rural areas in Florida have reported not only the lack of public transportation options, but also the necessity for traveling long distances at relatively high costs to fulfill their health care or shopping needs (Guerrier, 1994).

Evidently, as long as the elderly can drive, walk, or use public transportation, they also will be potential users of ITS technologies. Yet, given their economic condition, they may not have access to these technologies unless the latter are made affordable to them. Again, the economic situation of elderly African-Americans places them at greater risk of being kept away from this technology.

**Access to Computers as an Indicator of Access to ITS Technologies**

Beyond issues of affordability are those of development of skills that will promote familiarity with the technologies that will be used to access ITS information. This is an important issue since the likelihood that people will use a technology is related not only to their perception of the usefulness of that technology, but also to its ease of use. This can be enhanced through early familiarization with computers or related technologies. Therefore, access to computers will provide opportunities to become comfortable with that technology. Given the central role that will be played by computers in ITS, access to computers and familiarity with them can be good indicators of access to ITS technologies.

**Race and Access to Computers**

Computers have become integrated into many schools' curriculums. Yet, a recent article in the New York Times (March 12, 1995, p.10F) reported that fewer than 40 percent of African-American school children...
have access to computers in their schools compared with 60 percent of white school children. This article also points out that in some "... predominantly black inner city neighborhoods, one in four households" is without a phone line, thus effectively eliminating use of telecommunication of any kind. The lower exposure of African-Americans to computers has also been supported by census data. (See Table 1.)

**Table 1. Access to Computers by Race**

<table>
<thead>
<tr>
<th>Race</th>
<th>% Computer at Home</th>
<th>% Use in School</th>
<th>% Use Any Place</th>
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<tbody>
<tr>
<td>Black</td>
<td>8.4</td>
<td>36.9</td>
<td>18.4</td>
</tr>
<tr>
<td>White</td>
<td>18.3</td>
<td>43.6</td>
<td>29.4</td>
</tr>
<tr>
<td>Others</td>
<td>20.9</td>
<td>53.4</td>
<td>29.5</td>
</tr>
</tbody>
</table>

**AGE AND ACCESS TO COMPUTERS**

Besides race, access to computers is also highly related to the age of the individual. A 1989 survey of access to and use of computers by age showed older persons consistently to have less access to computers. (See Table 2.) Older persons may be infrequent computer users because of their lack of familiarity with that technology. However, as the baby boomers reach old age, computers will be commonplace. A recent study of computer use by the elderly showed that older persons are willing and able to use computers if the latter fulfill their needs and the interfaces are user-friendly (Czaja, Guerrier, Nair, and Landauer, 1993).

**SOCIOECONOMIC STATUS AND ACCESS TO COMPUTERS**

The race and age differences found in access to computers may also be, to a certain extent, affected by the individual’s socioeconomic status. The data has shown consistently less access and use of computers the lower the individual’s income. (See Table 3.) Even access to computers in schools is related to the socioeconomic status of communities where these schools are found. Thus, poor schools are less likely to have enough computers and trained teachers to share the skills needed to use these systems or computers at all.

**Table 2. Access to Computers by Age**

<table>
<thead>
<tr>
<th>Age</th>
<th>% Computer at Home</th>
<th>% Use Any Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-21</td>
<td>22.2</td>
<td>36</td>
</tr>
<tr>
<td>22-24</td>
<td>14.5</td>
<td>35.4</td>
</tr>
<tr>
<td>25-34</td>
<td>16.3</td>
<td>36</td>
</tr>
<tr>
<td>35-44</td>
<td>NO DATA</td>
<td>NO DATA</td>
</tr>
<tr>
<td>45-54</td>
<td>23.1</td>
<td>31.2</td>
</tr>
<tr>
<td>55-64</td>
<td>11.8</td>
<td>15.9</td>
</tr>
<tr>
<td>65+</td>
<td>4.6</td>
<td>2.6</td>
</tr>
</tbody>
</table>

**Table 3. Access to Computers by Family Income**

<table>
<thead>
<tr>
<th>Annual Income</th>
<th>% Computer at Home</th>
<th>% Use in School</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$10,000</td>
<td>6.1</td>
<td>46.5</td>
</tr>
<tr>
<td>$20,000-24,999</td>
<td>14.9</td>
<td>44.1</td>
</tr>
<tr>
<td>$50,000+</td>
<td>34.6</td>
<td>44.0</td>
</tr>
</tbody>
</table>

**Conclusion**

The data shown above seem to suggest that the poor and the old, particularly African-Americans in these groups, will be unable to enjoy the benefits of ITS technologies if they are neither accessible nor affordable to them. Access to ITS technologies will not be a luxury since the raison d’etre of the system will be to improve the management and coordination of transportation. It is important that all users of transportation...
systems have access to ITS technologies to contribute to the effectiveness and efficiency of the system. It would, therefore, seem mandatory for us to bring these issues to the table in considering the development and deployment of ITS Technologies. Unless we develop creative solutions, a large segment of our population will be left behind with negative consequences for all of us.

REFERENCES


Summary of Keynote Address

Gordon J. Linton
Administrator
Federal Transit Administration

Tampa is an appropriate platform for this second African-American Mobility Symposium. This symposium also is taking place at precisely the right time because, on the one hand, the voice of the minority community has finally emerged to play its rightful role in the area of transportation planning and decisionmaking. On the other hand, it sometimes looks like Congress wants to start the clock running backwards. I also note that the symposium has something in common with something else that is happening in Florida this week, in both transportation and baseball, the real major leaguers are back in town.

Under the Clinton Administration and under Secretary of Transportation Federico Peña, we have made a lot of progress in solidifying the role of African-Americans in the whole transportation decisionmaking process in our country. The President's cabinet has the largest percentage of minorities and women in our country's history. The two major surface transportation modes at the United States Department of Transportation (USDOT), the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), are both headed by Presidential appointees who are African-Americans. Within the complex operations of a $4 billion annual program like the FTA's, we have taken many significant steps to preserve and protect programs and policies that intimately impact the daily lives of African-American people.

Here are a few facts:

- Mass transit is important everywhere and mass transit helps all our citizens, whether they rely on it for daily mobility, or not. However, mass transit is a genuine lifeline for all minorities and for people at the lower end of the economic scale.
- Of all urban trips made by caucasians, 73.9 percent are made by automobile and only 1.9 percent are made by transit.
- Of all urban trips made by Black people, 61.8 percent are made by automobile and 10.3 percent are made by transit.
- Let us look at the ethnic composition of transit users:

  - 40.0 percent are white
  - 35.7 percent are Black
  - 16.9 percent are Hispanic
  - and 7.4 percent are classified as "other."

I do not know the margin for error in the Nationwide Personal Transportation Study (NPTS), the source of these statistics; however, I know a lot of political pollsters would look at the rates of Black versus white transit use and call it a dead heat.

Finally, one set of numbers derived from family income level; let us talk simply about families with incomes more than $30,000 a year and those with incomes under that figure:

- Families with incomes of $30,000 or more account for 63.8 percent of all automobile use in America, but only 42.7 percent of all transit use;
Families with incomes less than $30,000 account for 36.2 percent of all automobile use, but 57.3 percent of all transit use. That is not exactly a complete reversal but it is pretty close. You do not have to be a rocket scientist to draw some pretty fundamental conclusions from these statistics:

1. African-Americans depend on mass transit to a much greater extent than the population at large;
2. African-Americans have more to lose if Congress enacts any drastic reductions to the current levels of federal mass transit assistance.

Let us look at federal operating subsidies. We have had to scale them back from $800 to $500, but that is as far as we are going and we have compensated for even this small cut by “redefining” some expense categories as “capital” that were previously “operating.” The Chair of the House Budget Committee is talking about zeroing out operating subsidies and taking drastic cuts out of capital. The Chair of the House Budget Committee also is talking about eliminating our New Start program.

In calendar year 1994, this Administration signed a record number of multi-year grant contracts, 12, to build new transit lines and extensions in cities from coast-to-coast. In short, the Clinton Administration supports the mode of transportation that African-Americans rely on more heavily than any other ethnic group.

What else have we done to promote transit and ensure that African-Americans have a place at the table when transit investment decisions are made? We have issued the new planning regulations for which the Intermodal Surface Transportation Efficiency Act (ISTEA) calls. The regulations give new authority to metropolitan planning organizations (MPOs) in the whole decision-making process. Regulations that we believe will also speed up the rate at which state transportation planning (STP) and congestion mitigation-air quality (CMAQ) funds are transferred for transit use.

There is a larger point here that I do not want to overlook. If communities want to get involved in transportation decisionmaking, they have to educate themselves about things like the MPO process and how the local transit authority’s board of directors works.

Regarding transportation planning and an increased role for MPOs, we also want to start taking a closer look at the composition of those MPO boards. Somebody once said that MPO boards often treat the notion of “one man or one vote” the same as they treat everything else. It is something to be seriously considered in the next 10-year plan. We have already taken some pretty strong stands with respect to the composition of mass transit governing boards. Using both jawboning and the threat of Title VI sanctions, we have been successful in increasing minority representation on such boards.

Something this Administration has done that will impact African-American, and that I am especially proud of, is our Livable Communities Initiative. I wish I had better budget news to report on this initiative, but the concept is far more important than the money. Under Livable Communities, we are not just pouring concrete, or laying track, or running trains, or operating buses, we are building and sustaining neighborhoods and we are bringing vitality to them. Both words are important:

Livable: we are using transit investment as leverage to make sure the people who use transit can have access to the ordinary resources we all need in our daily lives — shopping, daycare;

Community: the planning process must have deep roots in the community itself. It is far too important to leave to the experts “downtown.” Notice in the issue paper for this symposium you point out that transit maintenance facilities often have negative effects on minority neighborhoods.

So let us talk about bus garages. Obviously nobody wants one next door. Just as obviously, buses should not be driving up and down residential streets where children are out playing. This is where environmental justice will ensure that concerns are heard in a timely fashion. Yet bus garages are more than places where diesel-powered vehicles belch fumes into the air. They are also places where lots of people go to work every day and they are places where lots of
good traditional craft jobs are still available. We have begun a dialogue with transit labor to explore ways that these bus garages in minority communities can develop apprentice and intern programs for young people in their neighborhoods. In summary, I stand before you as an advocate for both mass transit and for the kind of strong and vital communities that mass transit promotes and fosters.

In one of my first public appearances as FTA Administrator, I was asked to talk about “reverse commuting” and I did. I said that reverse commuting was popular, growing, and was an important thing to talk about. But I also said that reverse commuting was something else. I said reverse commuting was WRONG. The reason I said it was wrong then and the reason I believe it still is wrong is because reverse commuting accepts as a given something we should not have to accept at all — the loss of economic vitality in the central city. Please do not expect me to think everything’s fine if we run a half-dozen vans every morning from downtown out to an office park somewhere so a suburban employer can say he is meeting his equal employment opportunity (EEO) goals. I want that suburban employer to invest money in a new plant; a plant you can walk to from a new subway station; a subway station with a daycare center on the premises, and a series of stores around the perimeter so people can pick up necessities for supper when they pick up their kids.

Let me close by returning to something I said earlier. All those statistics that tell us African-Americans use mass transit more than other ethnic groups, I do not like those statistics any more than I like reverse commuting. The reason I do not like them is that I am afraid they reflect more lack of choice than anything else. We have to deal with these statistics, just like we have to deal with reverse commuting. I suppose my vision for the African-American community, though is the same as my vision for all Americans:

- Strong and effective mass transportation that helps build more livable communities;
- Mass transportation that all people will then use as a matter of choice, not necessity.

If you listen, you can hear the call to leadership beginning to sound. It is a little faint, at the moment, but we can begin to recognize it. It is not a sound that we get to hear all that often.

“All those statistics that tell us African-Americans use mass transit more than other ethnic groups, I do not like those statistics any more than I like reverse commuting. The reason I do not like them is that I am afraid they reflect more lack of choice than anything else.”
Environmental Justice in Transportation

Lee Johnson
Senior Regional Manager
ATE Management and Service Company, Inc.

Fast forward to the year 2005. The USA Today headline reads “Liveable Communities Pave the Way for Environmental Justice — Transit is the Key.” The byline asks what were the problems and issues leading up to that period?

The story unfolds with a definition of environmental justice. The environment is perceived as the sum of social, economic, and cultural conditions that influence the life of an individual or community. Another way of stating this is, lifestyle. Justice, on the other hand, is being impartial and fair. Leading up to this period, organizational structures, policy regulations, and planning activities were not integrated and inclusive of all players. The organizations who carried out our areawide planning, known as metropolitan planning organizations (MPOs), emphasized urbanization at a higher level. The cities carried out another level of planning. Transit agencies carried out another level of planning which was operational in nature. Each agency missed their mark because planning was not reflective of the people who use transit.

Remember the 1960s through the early 1980s when our interstate systems were under construction? Many communities, particularly the African-American, were the victims of highway construction. Eminent domain was used to vacate large tracts of land for construction. Picture these impacts:

- neighborhoods split in two or destroyed;
- neighborhoods isolated from other neighborhoods;
- a sense of community lost;
- restricted access to jobs;
- relocation of residents; and
- highways and automobiles making it easy for the population to flee to the suburbs without adequate planning for transit.

Some may argue that jobs were created. I argue that perhaps opportunities were created, but without a method of getting to those jobs from inner city neighborhoods, the opportunities were lost. A shift to suburbs by many created other social, economic, and political issues. The automobile became king and transit began to diminish in importance. Commuting times, traffic, and pollution began to increase. Would the results have been different if highway, transit, and community planning were integrated? Transit was not a major player in moving people. Therefore, the rules of the game as they related to law, regulations, planning, developing, and implementing transit services and facilities were not productive. The federal government attempted to boost transit, but that was not enough. Examples include the:

- Surface Transportation Act,
- Americans with Disability Act, and
- Intermodal Surface Transportation Efficiency Act (ISTEA) and unfunded mandates. (A major point was the provision for coordination between highway and transit to improve efficiency. By 1995, less than 2 percent of the funds have been transferred between the agencies.)

Apart from the government, there are major transit issues within each community.
These are some of the issues from the perspective of transit users and operators and planners of transit facilities and services.

- Many communities do not want transportation facilities, such as bus stations and transfer centers, in their neighborhoods due to the perception of crime, other undesirable activity and poor management;
- Transit agencies throughout the country have concentrated on the efficiency of operating transit systems and facilities. However, there are few models of facilities where a full range of customer needs is well-accommodated;
- The process currently used for planning transit facilities and service is usually not community-based. As a result, several of these facilities do not meet the needs of the community as well as they can;
- Much of the planning for transit facilities and services is being done separately from traffic and transportation planning and from community redevelopment departments within cities;
- Many transportation professionals are interested in adopting innovative approaches and solutions to transit problems that would positively impact livability;
- There is no support system in terms of policy, standards, and exchange of innovative ideas at either the state or federal level.

Congress is about to turn out the lights on operating subsidies and communities. Lifestyles are being threatened, particularly in small cities heavily dependent upon funding. It is the dawning of a new era. There is a general agreement that ISTEA and other programs are not working. The organizational structure, regulation, planning, development, and implementation of transit services and facilities are not inclusive of all the players such as transit, highway, and community development. What is needed is a fundamental change in the way we do business.

FTA Liveable Communities Initiative

PURPOSE

- Demonstrate the physical and functional relationship between transit and communities through customer-friendly, community-oriented, and well-designed facilities and services;
- Incorporate the Livable Cities Initiative (LCI) principles into the FTA planning, research, capital, and operating assistance programs.

OBJECTIVES

- Collaborative, participatory and coordinated transit and community planning;
- Customer-friendly, community-oriented, and well-designed transit facilities and services;
- Transit as an element in improving the quality of life in communities.

Transit and Communities: The Federal Perspective

NATIONAL TRENDS

On the federal level, the interface of transit and communities is being emphasized on three levels:

- linking land use and transportation;
- claiming broader benefits of transit; and
- evolving the forms of transit.

LAND USE CONNECTIONS

Increase transit use may contribute to improved land use and overall connectivity. In order to accrue these benefits planning should include:

- trip reduction measures;
- transit and urban design; and
- community involvement.

TRIP REDUCTION MEASURES

- Mixed-use development
- High-density development
- Job or housing balance
- 18-percent reduction in auto trips

TRANSIT AND URBAN DESIGN

Increasing consideration must be given to the integration of transit into urban design. This may include more emphasis on:

- pedestrian access;
- vehicle access;


[Image 0x0 to 614x799]

- safety and security elements;
- multipurpose transit facilities; and
- a 5.5 percent increase in transit use.

**COLLABORATIVE PLANNING**

Community involvement may mean a new way of doing business — collaborative planning — for some in the transit industry. Collaborative planning may be new because its approach is:
- inclusive;
- active; and
- participatory

**BROADER BENEFITS OF TRANSIT**

Why argue market share? Transit can has the potential to positively influence three aspects of well-being:
- social;
- economic; and
- environmental.

**SOCIAL BENEFITS OF TRANSIT**

- Involvement in decisionmaking;
- On-site community services;
- Equal access.

**ECONOMIC BENEFITS OF TRANSIT**

- Community empowerment;
- Tax-base effects;
- Business and real estate development.

**ENVIRONMENTAL BENEFITS OF TRANSIT**

- Reduced vehicle miles traveled (VMT) — cleaner air;
- Cleaner air — healthier communities.

**What can we do to bring about environmental justice and impact the policies and procedures that conflict with effective transit?**

- Become knowledgeable of the transportation planning, design, and development processes
- Become proactive in both short and long range transportation activities.
- Seek solutions, positions, and careers within MPOs, local officials, transit boards, and so on.
- Seek solutions through partnerships driven by each community’s needs.

“I visualize environmental justice will be far more favorable upon the fulfillment of FTA’s Livable Communities objectives. Each of us also must take a proactive position on community issues.”
Georgia Transportation Alliance

Lucius McDowell
Community Coordinator
Georgia Transportation Alliance

Georgia Transportation Alliance (GTA) is a nonprofit, statewide, public-interest group concerned with the future of transportation and transportation policy in Georgia. Its mission is to change transportation policy toward a balanced, multimodal system for the state of Georgia through the involvement of an informed public.

The goals of GTA are:

- To define a balanced, multimodal, transportation system in Georgia.
- To communicate important transportation issues to the public.
- To communicate transportation choices to decisionmakers.
- To facilitate networking and coordination among interest groups and to act as a resource for those groups.
- To collect and disseminate information.

GTA’s accomplishments include:

1. The development of a diverse group of nearly 1,000 participating groups and individuals including environmentalists, consumers, persons with disabilities, businesses, planners, and academicians.
2. Ongoing monitoring and reporting of planning activities and processes of the metropolitan planning organizations, regional development commissions, and the state.
3. The production of a collaborative, critical analysis of the Georgia Department of Transportation’s vision document, “Transportation 2000,” which was distributed to the Commissioner of the Georgia Department of Transportation, its Board of Commissioners, and members of the Transportation 2000 Commission.
4. The production of “Transportation Financing Alternatives for the State of Georgia,” a white paper outlining current and possible funding mechanism for Georgia distributed to members of the transportation and appropriation committee of both the House and Senate as well as to the press and other individuals.
5. The selection of GTA’s Executive Director, as the Chair of the Atlanta Regional Commission’s Vision 2020 Transportation Collaborative, a group of stakeholders charged with the implementation of the transportation vision for 2020.
6. The commencement of a community outreach program designed to educate and involve traditionally under-represented population in transportation at all levels.
7. Ongoing technical assistance to community and neighborhood groups involved in specific transportation issues.

Georgia Transportation Alliance Community Projects

Objectives: To identify community transportation concerns that will allow GTA to educate and organize communities, especially low income and minority communities, around broader transportation issues. To introduce communities to the planned ongoing activities of GTA.
PROJECT: SOUTH DEKALB COMMUNITIES

Problem: A major transportation concern in the South Dekalb area is the need for a pedestrian overpass crossing Glenwood Road. Many individuals have been injured or lost their lives because of inadequate pedestrian crossing facilities on Glenwood Road. At one location in the area, a playground is on one side of the street and a park is on the other. There are major concerns for pedestrian crossing not only in that particular location, but throughout the Glenwood Road area. The residents have complained and tried voicing their concerns to planners. Local government planners state that the road is not under the jurisdiction of the county; it is a state road and should be a state project. Other transportation concerns are the needs for traffic lights in congested areas and sidewalks throughout the community.

Strategy: GTA will work with the citizens of South Dekalb to develop solutions to transportation problems. GTA will help organize these communities including Columbia Cluster of the Atlanta Project actively to advocate solutions to specific concerns. GTA will involve the community on the broader transportation planning process. It is the intention of GTA to have transportation concerns of the community heard and to have strategies implemented to get needed results.

PROJECT: GEORGIA COMMUTER RAIL

Problem: The Georgia Department of Transportation has begun to address the need to increase passenger capacity of the transportation system in the metropolitan area of northern Georgia. A comprehensive study was completed in 1994 that provided information on the most cost-effective approach to providing commuter rail service; an estimate of ridership; an analysis of the financial requires for commuter rail; and the economic impacts commuter rail will have on the counties in which the rail corridors will be located.

Strategy: GTA is willing to undertake a community education program on commuter rail throughout the northern metropolitan area of Georgia. The goal of this program is to establish a strong constituency in communities for the successful implementation and adequate funding of the commuter rail network.

PROJECT: CHAMBLEE-TUCKER ROAD WIDENING

Problem: The Embry Hills and Windsor Forest communities of North Dekalb County, located between Interstate 285 and Interstate 85, are opposing the widening of the Chamblee-Tucker Road. The Georgia DOT is threatening to ignore all the impacts that this project will have on residential neighborhoods. The citizens feel that the impacts cannot be ignored as their cumulative effects will do unnecessary and irreparable harm to their homes and quality of life. Some of the issues regarding the project include:

- the economic feasibility of the project;
- no alternative routes have been considered;
- failure to address traffic flow and air pollution problems;
- the homes in the area will be affected by noise levels more than the applicable abatement criteria.

The Embry Hills and Windsor Forest subdivisions comprise more than 300 homes. Neighborhood leaders have gathered information concerning the legality of the project. They feel that they have been overlooked and that the National Environmental Policy Act has been violated. It appears that some information was withheld from the public during the public hearings.

Strategy: GTA will work as an organizer to provide strategies for the community. GTA will work with the community leaders to build skills that will help the community get the attention needed. It is also GTA's intention for the neighborhoods to become empowered, develop a stronger coalition, and to educate them concerning the broader aspects of transportation planning.

PROJECT: DISABILITY TRANSPORTATION

Problem: Persons with disabilities have unmet transportation needs. In a discus-
sion with representatives of persons with disabilities, a need for paratransit buses was expressed. Other needs include accessible sidewalks; presently disabled persons are using the street or road shoulders to access bus stops.

**Strategy:** GTA will work with persons with disabilities and their representatives to help them effectively voice their concerns and achieve their goals.

**Conclusion**

Community coordination for improved transportation provides access to citizens in order to gather information and participate in the decisionmaking process. ISTEA mandates the establishment of public involvement procedures that provides citizens a role in developing transportation plans and progress well before the approval stage. Often it is the "not in my backyard" projects that get communities interested in transportation, which is a clear indication that there is room for informing and educating. The better educated citizens are about transportation policies the more effective they will be as advocates.

Once information is disseminated to organizations, it will cause empowerment. It is important that citizens know how intelligently to articulate concerns. Knowing who and what role the departments of transportation, metropolitan planning organizations, Federal Highway Administration, Federal Transit Administration, and Federal Rail Administration have in the decision-making process, gives communities information as to where issues should be directed.

In 1991, ISTEA created a new framework for increased public and stakeholder involvement, fiscal discipline, long-range planning, funding flexibility, and attention to the serious problems of metropolitan congestion. Hundreds of thousands of Americans have become involved in making transportation policy accountable to the public. ISTEA was a step in the right direction toward increased state and local flexibility and greater accountability of transportation programs to the public. We have made some progress, but there is room for much improvement.

"The better educated citizens are about transportation policies the more effective they will be as advocates."
Analysis of Trip Generation Characteristics in the Third-World: A Case Study for City of Dar-es-Salaam, Tanzania

Satyakala Jarugumilli
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Shashi K. Sathisan
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Abstract

The conventional urban transportation planning (UTP) process was designed for the western or developed world. The models used in this process rely heavily on a set of socioeconomic variables associated with people's propensity to travel, specifically by private vehicle. They are based on data collected from several sources such as census data and household travel surveys. The procedure assumes a degree of homogeneity in the mix of households in the urban areas under study. However, several studies have suggested the deficiency of the process in application to poorer communities, especially those of the Third World countries. The socioeconomic environment in these communities is markedly different from that prevailing in the developed world. Many urban areas contain a mix of ethnic households with structural differences in income and social status. Automobile travel and vehicle ownership central to the UTP process in the developed countries are typically less significant in these poorer communities. Therefore, the conventional application of the UTP process may not be relevant to the Third World.

Research Objective

The main objective of this research was to study the tripmaking characteristics and travel sensitivity of the people in a Third World city. A framework was developed to model groups of people based on one or more key factors influencing travel demand such as income, household size, accessibility to private automobile, and so on. Dar-es-Salaam, a Third World city and the capital of Tanzania, in Africa, was used as a case study to illustrate the application of the framework developed.

Third World Characteristics

Third World countries share several common socioeconomic characteristics:

- dependence on the industrialized countries for trade, investment, monetary arrangements, university education, research and development activities and so on;
- a dual economy with widespread inequalities (A dual economy manifests itself in the coexistence of modern and traditional methods of production: "formal" — registered and taxable — and "informal" — un-
A major parameter that influences urban travel and efforts at meeting travel demand in Third World cities is the out-of-pocket cost of travel, with some consideration of time costs.

It is a common occurrence in Third World countries to link trips to visit more than one destination after leaving the origin, usually home. The spatial distribution of trip ends and trip timing, as well as the total number of trips, varies substantially depending on the way trips are linked to each other. Consolidating these trips can prove effective in terms of travel time and cost. Therefore, it is likely that urban residents' trip chaining behavior will change over time as travel cost, congestion, land-use patterns, and other factors change.

Approach

The most commonly used technique for the development of the prediction equations, the Classical Multiple Linear Regression (CMLR) analysis was employed in the study. This involves the study of one variable as a function of various other explanatory variables, which are likely to affect the dependent variable.

The general form of the CMLR model is:

\[ y_i = b_0 + b_1 x_{i1} + b_2 x_{i2} + \ldots + b_k x_{ik} + u_i = b^T x_i + u_i \]

where:
- \( y_i \) is the number of trips reported by household \( I \);
- \( b \) are the coefficients, \( b = (b_0, b_1, \ldots, b_k) \);
- \( x \) are explanatory variables, such as household size, household income and so on;
- \( x_i = (x_{i1}, x_{i2}, \ldots, x_{ik}) \);
- \( u_i \) is a random error term.

The variables that were thought likely to affect trip generation include household size, household income, gender and age of the individual, employment type and occupation of the individual, automobile and bicycle ownership, labor force in a household, and ethnicity of the individual. A preliminary analysis was done to identify the key variables. Each variable was checked for significance.

Initially, one model for the complete study area was developed. The study area was further stratified into different groups and models were developed for each group based on various income categories. The effect of these trip factors in explaining trip generation and travel pattern was studied using a case study. A typical trip generation regression model including the significant variables took the following form:

\[ \text{Total trips/HH} = f(\text{Income, Family Size, Age of the head, Gender of the head, Industry, Access to vehicle, Motorcycle, Bicycle}) \]

Signs a priori

An increase in size of a household was expected to increase the number of trips generated by a household. Therefore, the coefficient for the household size variable was expected to be positive. Also, higher income households were expected to make more recreational and non-work trips; therefore, the coefficient for this variable was expected to be positive. Similarly, accessibility to any kind of private vehicle, motorized or nonmotorized, was expected to increase the total number of trips generated by a household. Therefore, these coefficients were expected to take positive signs. The effects of age and gender of household head variables and the type of industry in which the household head was employed were not explicit and need to be studied.

The developed models were further checked for significance based on the R² value, the F-statistic, and the t-statistic. A t-statistic of +/- 1.00 and F-statistic of 3.00 were acceptable as the available data were highly nonhomogeneous.
**Study Area and Data**

Dar-es-Salaam is the largest city in Tanzania, Africa, with a population of approximately one million inhabitants as of January 1982 (National Transport Corporation, 1985). It is the principal center of commerce and industry. The total size of the city is 1,393 square kilometers (538 square miles).

Figure 1 shows the study area map. In 1991, the city experienced a population growth rate of 4.9 percent per annum that was much higher than the national average of 2.8 percent per annum (Wilbur Smith Associates, 1991). Home interview survey data available for traffic analysis zones in the city of Dar-es-Salaam provided household, personal, and trip information. This information was based on individuals more than 16 years of age who were interviewed.

**Procedure**

**Study Area Model (Total Trips/Household)**

The calibration process explained in the previous section was used to develop a model for the complete study area. A single model for all 22 zones under consideration gave a very poor fit explaining only 13 percent of the variation in total household trips generated. Table 1 summarizes the coefficients and corresponding t-statistic of the study area model. All the variables in the model, except income, were significant in explaining the variation in trip generation. The overall model was good with a high F-statistic of 27. Therefore, there was a need to separate the zones into different groups.

"A single model for all 22 zones under consideration gave a very poor fit explaining only 13 percent of the variation in total household trips generated."
``The study area was divided into different groups, based on the premise that there were underlying differences in the travel behavior of the people living in different parts of the city."
ANALYSIS OF ZONAL STRATIFICATION

A study of the available household data for the 22 zones revealed that about 15 percent of the households living in the residential and industrial regions had access to private vehicles, while about 47 percent of the households in the downtown areas had access to private vehicles. Similarly, around 10 percent had access to motorcycles, while around 46 percent had access to private vehicles in the central business district (CBD) areas. Access to bicycles was only 15 percent. Approximately 85 percent of the household heads interviewed were employed in commerce, financial, and transportation services, while the other 15 percent was involved in agriculture, forestry, fisheries, construction, maintenance and so on. Approximately, 80 percent of the households were headed by males. Table 2 provides summary statistics.

Table 3 summarizes the averages for household incomes and sizes for the different groups in the study area. The downtown area had high income groups with large families. The average household income in Residential Area I was relatively high compared with that in Residential Area II, with smaller average household sizes in Residential Area I. These differences in the characteristics were thought likely to affect the trip generation pattern of these groups. In general, the average income of households in the industrial area was much lower than those residing in other areas of the city.

There was a large variation in the distribution of income groups among the different areas. While the distribution was skewed toward low income for the residential and industrial areas; the distribution for the downtown area did not follow any pattern. There was an equal concentration of all the income groups in the downtown area, many people living in the residential and industrial areas belonged to the medium income group, with a very small proportion belonging to the high and very high income groups. However, the residential area was divided into two separate groups depending on the average income of the zones. A very small proportion of the population, 12 percent, comprised the very high income groups.

Statistical Models and Discussion of Results

The number of trips per household is given as:

\[
\text{trips/HH} = b_0 + b_1 \text{hhsize} + b_2 \text{income} + b_3 \text{gender} + b_4 \text{age} + b_5 \text{industry} + b_6 \text{vehicle} + b_7 \text{motor} + b_8 \text{bicycle}
\]

where:

- \(\text{trips/HH}\) = the total number of daily trips made by the household;
- \(\text{hhsize}\) = the size of the family;
- \(\text{income}\) = the total monthly income of the household in Tanzanian shillings;
- \(\text{gender}\) = 1 if the household head was a male, 0, otherwise;
- \(\text{age}\) = age of the head of household in years;
- \(\text{industry}\) = 1 if the head of household was employed in commerce, finance, transportation service, public service, otherwise, 0;
- \(\text{vehicle}\) = 1 if household has an access to a private vehicle, otherwise, 0;
- \(\text{motor}\) = 1 if household has an access to a motor cycle, otherwise, 0;
- \(\text{bicycle}\) = 1 if household has an access to a bicycle, otherwise, 0.

<table>
<thead>
<tr>
<th>Table 3. Average Household Incomes and Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income (Tanzanian Shillings)</td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>62,000</td>
</tr>
<tr>
<td>Size (# persons)</td>
</tr>
</tbody>
</table>

"There was a large variation in the distribution of income groups among the different areas."
One model for the complete study area gave a poor fit explaining only 13 percent of the variation in total household trips generated.

Table 4. Downtown Area Total Trip Generation Models

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>t-statistic</td>
<td>Coefficient</td>
<td>t-statistic</td>
</tr>
<tr>
<td>Household Size</td>
<td>0.530</td>
<td>(2.014)</td>
<td>-0.248</td>
<td>(1.929)</td>
</tr>
<tr>
<td>Income</td>
<td>0.483</td>
<td>(2.392)</td>
<td>0.079</td>
<td>(1.092)</td>
</tr>
<tr>
<td>Gender</td>
<td>0.054</td>
<td>(1.247)</td>
<td>0.0066</td>
<td>(1.771)</td>
</tr>
<tr>
<td>Age</td>
<td>-2.524</td>
<td>(-1.764)</td>
<td>-1.374</td>
<td>(-1.289)</td>
</tr>
<tr>
<td>Industry</td>
<td>1.193</td>
<td>(1.936)</td>
<td>2.956</td>
<td>(2.672)</td>
</tr>
<tr>
<td>Vehicle</td>
<td>8.429</td>
<td>(4.449)</td>
<td>1.843</td>
<td>(1.694)</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>2.056</td>
<td>(2.069)</td>
<td>2.056</td>
<td>(2.069)</td>
</tr>
</tbody>
</table>

R² | F | dF | N |
---|---|---|---|
0.356 | 3.504 | 19 | 23 |
0.123 | 4.699 | 63 | 66 |
0.624 | 4.982 | 15 | 21 |
0.309 | 3.335 | 52 | 60 |

EMPIRICAL ANALYSIS

One model, Table 1, for the complete study area gave a poor fit explaining only 13 percent of the variation in total household trips generated. Table 2 shows that household size, gender and age of the head of the household, type of industry in which the head of the household was employed, and accessibility to any private motorized and nonmotorized vehicles were all significant in explaining the overall model. However, household income, being a key element in the generation of trips, did not explain the variation in trip generation. Although the R² was low, the performance of the overall model was good with a high F-statistic value of 27.90. Regression models then were developed for each stratum and each group was further stratified based on zonal incomes, into low, medium, high and very high income groups, to study the travel behavior more closely.

MODELS FOR DOWNTOWN AREA

Table 4 summarizes the total generation models for all the income groups of the downtown area.

LOW INCOME MODEL

The low income model gave a good fit, explaining 36 percent of the variation in total trips generated in the area. The most significant variable was the household income. The total trips generated was also influenced by the household size and type of industry.
in which the head of household was employed. From Table 4, it can be observed that for every additional member in the household, an additional 0.53 trips were produced. Similarly, an increase of 1,000 shillings in total monthly income led to an additional 0.483 trips by the households in the low income groups, while every additional member of the household, employed in industry type 3 was likely to produce 2.5 fewer trips. This model development effort suggested that total trip generation among low income groups was primarily determined by the size of the household, the total household income, and the industry type in which the head of household was employed, and was not influenced by gender or age of the head of household or accessibility to any vehicle (motorized or nonmotorized).

Walking, the primary mode of transportation used in the Third World countries, should be given due consideration. The walk trip generation model for this group gave a good fit, explaining about 47 percent of the variation in total walk trips generated from the area. The gender of the head of household and accessibility to vehicle and motorcycle variables were the only significant explanatory variables. These variables also had a negative impact on the trips generated. Therefore, access to vehicles and motorcycles among low income groups led to decreases in walking as a primary mode.

The most significant variable in the work trip generation model for the low income groups was the gender of the head of household. It was common among the low income groups that women in the household work as housekeepers for the high income groups to generate income to support their families. The model gave a good fit, explaining about 40 percent of the variation in work trips generated by the household.

**High Income Model**

The high income total trip generation model gave a good fit, explaining 62.4 percent of the trips generated. The number of trips generated by the high income groups was primarily determined by the household size, income, age of the head of the household, type of industry, and access to a motorcycle. Unlike the low income group model, the household size variable had a negative coefficient suggesting that as the size of the family increased, the number of trips generated decreased. Also, as the age of the household head increased, more trips were likely to be generated. Access to motorcycles led to 4.45 additional trips per household. Like the low income groups, around 51 percent of the variation in walk trips was explained.

An interesting observation was that as household size increased, high income groups were likely to generate more walk trips. Also, access to vehicles resulted in fewer walk trips, while access to bicycles resulted in more walk trips. Like the medium income groups, the variation in work trip generation for the high income groups had a poor fit, with only 11 percent explained. The only significant variable was the accessibility of motorcycle. The size of the household had a negative impact on the trips generated.

**Medium Income Model**

The model gave a poor fit, explaining only 12.3 percent of the variation in total trips generated by the medium income households. The number of trips generated by a household was determined primarily by the accessibility of the household to a vehicle or a bicycle. As expected, access to vehicle and bicycle led to 1.2 to 2.0 additional trips, respectively. The walk trip generation pattern for this income group had a very low predictability. Only 6 percent of the variation in walk trips generated were explained by the model. The work trip generation pattern of the medium income households was difficult to predict. Access vehicle and bicycle variables were significant.

**Very High Income Model**

The total trip generation model for this group gave a reasonable fit, explaining 31 percent of the variation in trip generation patterns. The vehicle accessibility variable was highly significant. All the variables except accessibility to bicycle were significant in explaining the trips generated. While household size, age of the head of the household, accessibility to vehicle and motorcycle
Common observations were that access to vehicle and motorcycle was found to decrease walk trips among all the income groups.

MODELS FOR RESIDENTIAL AREAS

Zones 130, 140, 150, and 260 with average zonal incomes greater than 35,000 shillings per month, showed a variation in behavior compared with the other residential zones with average zonal incomes less than 35,000 Shillings a month. Residential area zones were classified into Residential Areas I and II for clarification.

RESIDENTIAL AREA I MODELS

Zones 130, 140, 150, and 260 with average zonal incomes more than 35,000 shillings per month belong to the Residential Area I. These areas were predominantly residential areas; significant differences in travel behavior expected. Separate models were developed for these areas. Table 5 summarizes the trip generation models.

LOW INCOME MODEL

The trip generation model for low income groups explained only 17 percent of the total trips generated. The variable that had the highest significance on trips generated was household size, with a t-statistic of 4.375. Other significant variables in the model were income and accessibility to motorcycle and bicycle. Unlike the work trip models, the non-work trip model gave a better fit, explaining 16 percent of the variation in non-work trips generated. The significant variables were the household size, income, and motorcycle accessibility. Access to a motorcycle led to 2.6 additional non-work trips.

MEDIUM INCOME MODEL

Like the models in other zones, the trip generation pattern of the medium income groups was less predictable. The total trip generation model developed here explained only 17.9 percent of the variation in trips generated. The household size, income, and vehicle and motorcycle accessibility variables were observed to be significant. The medium income group households were likely to make more trips with increased vehicle accessibility. Work trip generation models for low and medium income groups give very poor fits, explaining only 4 percent and 6 percent of the variations, respectively. However, the income and gender of the head of the household variables were significant in the medium income groups, while bicycle accessibility was the only significant variable in the low income model. Household size was very significant in explaining the non-work trips generated by the medium income groups, with an $R^2$ value of 17.6 percent.

HIGH INCOME MODEL

The total trip generation model for the high income group explained around 22 percent of the variation in trips generated. It was observed that household size, industry type, and vehicle accessibility were significant and had a positive impact on the total trips generated by a household. Unlike the low and the medium income models with less predictability, about 28 percent of the variation in work trips generated in the high income groups could be explained. Increased access to autos, motorcycles, and bicycles led to more work trips. About 17.3 percent of the variation in non-work trips could be explained. The household size, industry type, and vehicle accessibility vari-
Table 5. Residential Area I Total Trip Generation Models

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (t-statistic)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household Size</td>
<td>0.329 (4.376)</td>
<td>0.334 (6.979)</td>
<td>0.157 (1.023)</td>
<td>0.639 (3.122)</td>
</tr>
<tr>
<td>Income</td>
<td>0.093 (1.663)</td>
<td>0.0187 (1.474)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td>5.483 (2.586)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td></td>
<td></td>
<td>3.254 (1.865)</td>
<td></td>
</tr>
<tr>
<td>Vehicle</td>
<td>0.632 (1.838)</td>
<td>2.394 (2.789)</td>
<td>2.170 (1.905)</td>
<td></td>
</tr>
<tr>
<td>Motorcycle</td>
<td>2.837 (2.368)</td>
<td>0.491 (1.407)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycle</td>
<td>0.753 (1.399)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.172</td>
<td>0.179</td>
<td>0.21</td>
<td>0.362</td>
</tr>
<tr>
<td>F</td>
<td>7.704</td>
<td>17.124</td>
<td>3.598</td>
<td>7.224</td>
</tr>
<tr>
<td>dF</td>
<td>144</td>
<td>310</td>
<td>36</td>
<td>34</td>
</tr>
<tr>
<td>N</td>
<td>149</td>
<td>315</td>
<td>40</td>
<td>38</td>
</tr>
</tbody>
</table>

Variables were significant, having a positive impact on the trips generated.

**Very High Income Model**

The model for households for very high income groups explained around 36.3 percent of the variation in total trips generated. The household size, gender of the head of household, and vehicle accessibility were the only significant variables in explaining the number of household trips generated. The very high income groups give better total trip generation models. Household size, gender, and vehicle accessibility were found to have a positive effect.

The walk trip pattern was similar to the other models for all income groups. Access to a private vehicle, however, had no impact on the walk trips generated by the low income groups, while it had a negative impact on the walk trips generated by the medium income groups. Very poor walk trip models were obtained for Residential Area I with an $R^2$ value of 11.7 percent for the very high income groups.

The work trip generation model for the very high income groups explained around 30.6 percent of the variation in work trips generated. The significant variables were the gender of the head of household and vehicle and bicycle accessibility.

Households belonging to the very high income groups gave good fit. The gender of the head of household was found to have a positive impact. Also, vehicle and bicycle accessibility were found to have a positive impact on the work trips generated. House-
hold size did not determine the number of work trips generated, although it was significant in determining the total trips generated. The non-work trip generation model for the very high income groups was much similar to that for the work trip model, with an $R^2$ value of 33 percent.

The household size and gender of the head of household were found to have positive impacts, while bicycle accessibility had a negative influence on the total non-work trips generated. It was observed that only the very high income groups give good fit with household size and gender of household head having a positive impact. Age and industry had negative impacts.

**HIGH INCOME MODEL**

Table 5 shows that there was little variation in the behavior of the tripmaking pattern across various income groups. The developed model explained about 29.3 percent of the variation in total trips generated. The size of the household and bicycle accessibility had a positive impact on the total trips generated, while the household income, gender of the household head, and the type of industry had negative impacts. The walk trip patterns for high income groups were better explained, with an $R^2$ value of 33 percent. The significant variables were household size and motorcycle accessibility with positive impacts. The gender of the head of household and industry type had negative impacts. Motorized transportation and bicycle accessibility had positive impacts. Industry type and the gender of the head of household had negative impacts on the trips generated. About 30 percent of the variation in non-work trip patterns was predictable.

**VERY HIGH INCOME MODEL**

The total trip generation was better explained, 45 percent, in the very high income groups. Access to bicycles continued to have a positive and significant impact on total trip generation. Other significant variables were household size, having a positive impact, and the industry type, a negative impact.

Residential Area II models were better explained for very high income groups, while other groups gave poor fits. However, there was a significant difference in the travel behavior between the two groups. Approximately 45 percent of the total trips...
TABLE 6. RESIDENTIAL AREA II TOTAL TRIP GENERATION MODELS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household Size</td>
<td>0.321</td>
<td>0.379</td>
<td>0.509</td>
<td>0.365</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td>-0.057</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>-1.409</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.058</td>
<td>0.013</td>
<td>-0.713</td>
<td>-1.423</td>
</tr>
<tr>
<td>Industry</td>
<td>-0.713</td>
<td>-1.409</td>
<td>-2.626</td>
<td></td>
</tr>
<tr>
<td>Vehicle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motorcycle</td>
<td>0.735</td>
<td>1.118</td>
<td>2.794</td>
<td>1.803</td>
</tr>
<tr>
<td>Bicycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.255</td>
<td>0.205</td>
<td>0.283</td>
<td>0.452</td>
</tr>
<tr>
<td>F</td>
<td>22.107</td>
<td>42.426</td>
<td>4.502</td>
<td>10.694</td>
</tr>
<tr>
<td>dF</td>
<td>253</td>
<td>490</td>
<td>51</td>
<td>35</td>
</tr>
<tr>
<td>N</td>
<td>258</td>
<td>494</td>
<td>57</td>
<td>39</td>
</tr>
</tbody>
</table>

The work trip models for all income groups gave poor fits, explaining only 18 percent of the variation in work trips generated.

Generated were explained for the very high income groups versus 36 percent for Area I. Household size was significant in explaining the total trip generation models for Area II. Also, vehicle accessibility did not significantly affect trips generated in Area II. (It had a positive impact on the households of Area I.) Industry type was found significant with a negative impact on trips generated in Area II. Unlike the other zones, only 4 percent of the variation in walk trips for the very high income groups was explained. Household size was the only significant variable. Around 39 percent of the variation in non-work trips generated was explained. This model was similar to the high income model. One interesting observation was that households with male heads were likely to make more trips than females, unlike that observed in the high income model. The work trip models for all income groups gave poor fits, explaining only 18 percent of the variation in work trips generated in all income groups.

Household size, gender of the head of the household, industry type, and motor- cycle and bicycle access were significant variables in explaining the work trip models. The work trip models developed for the residential areas, in general, were poor. It appears that vehicle accessibility did not affect walk trips, while it increased work trips. Thus, it can be observed that house-
"Household size was the most significant variable in explaining the walk trips in this region."

<table>
<thead>
<tr>
<th>Table 7. Industrial Area Total Trip Generation Models</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income Variable</strong></td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>Household Size</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Income</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Industry</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Vehicle</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Motorcycle</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Bicycle</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>R²</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>dF</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

Increase in income appeared to lead to fewer total trips. Increased motorcycle access led to more total trips generated, while increased vehicle accessibility decreased the total number of trips. The walk trip models developed for the industrial area gave very poor fits, with a predictability of less than 10 percent. Household size was the most significant variable in explaining the walk trips in this region. Other significant variables included age of the head of household, type of industry in which the head of household was employed, and vehicle accessibility.

The very high income groups gave a good fit of the model, explaining 44.4 percent of the variation in work trips generated. Only 5 to 10 percent of variation was explained among the other groups. The only

holds belonging to these zones appeared only to make essential trips.

**Models for Industrial Area**

Zones 70, 80, and 90 were primarily industrial locations. Separate models were developed for this group of zones. Table 7 summarizes the trip generation models for the various income groups for the industrial area. Trips generated for the very high income groups gave a good fit, explaining 33 percent of the variation in total trips, while all other groups explain less than 25 percent variation. All the variables were significant to an extent among the low income groups; only household size variable was significant among the high income groups.
significant variable in the very high income model was access to a motorcycle. Household size was a significant variable among the other groups. Also, vehicle accessibility and bicycle accessibility measures were significant among certain income groups in explaining the variation in total work trips generated in the areas. Increased motorcycle access led to fewer work trips.

Around 38.2 percent of the variation in non-work trips generated among the very high income groups was explained by the model; less than 20 percent among the other groups. Household size, income, gender of the head of the household, and accessibility to a private vehicle and motorcycle were the most significant variables among the low income groups. The medium income group household non-work trip generation was mostly influenced by the household size, age of the head of the household, and accessibility to a private vehicle. However, increased vehicle access appeared to be either not significant or reduced non-work trips among the high and the very high income groups respectively.

Among the very high income groups, vehicle accessibility, household size, and income had negative effects on the number of non-work trips generated, while gender of the head of household, and motorcycle accessibility had positive impacts.

In general, only the high income groups gave better models with good fits. The very high income households were less sensitive to non-work trips. The industrial area, primarily a work zone that attracted trips, explained less work trip generation.

### Sensitivity Analysis

Analysis of the income variable for non-work trips across groups (See Table 8.) revealed that low income households in the downtown areas were much more sensitive to income than similar households in other areas. Households living in downtown areas had access to different places because of a good public transit service system (Wilbur Smith Associates, 1991). Low income households in Residential Area II tended to make less non-work trips with increased in household income. The average household income of the households in this area was less than those in Residential Area I that may have resulted in fewer non-work trips.

Analysis of income sensitivity for work trips across different groups revealed that low income groups in the downtown area were more sensitive to work trips. It appeared that as income increased, very high income households in downtown area made fewer work trips. These groups of households, classified as high and very high, often hired housekeepers to make short trips to grocery stores, shopping, and so on.

Low income households in the downtown area were likely to generate more work trips with access to private vehicles, while the work trip generation by low income groups of other areas remained unaffected by increased access to private vehicles. High and very high income households were likely to generate more non-work trips with increased access to private vehicles. However, vehicle accessibility did not affect non-work trip generation among low income households.

### Table 8. Income Sensitivity of HH Size to Total Trip Models

<table>
<thead>
<tr>
<th>Area</th>
<th>Total Trips</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown</td>
<td>Low</td>
<td>0.530</td>
<td></td>
<td>-0.248</td>
<td>0.165</td>
</tr>
<tr>
<td>Residential I</td>
<td>Low</td>
<td>0.329</td>
<td>0.334</td>
<td>0.157</td>
<td>0.639</td>
</tr>
<tr>
<td>Residential II</td>
<td>Low</td>
<td>0.321</td>
<td>0.379</td>
<td>0.509</td>
<td>0.365</td>
</tr>
<tr>
<td>Industrial</td>
<td>Low</td>
<td>0.352</td>
<td>0.292</td>
<td>0.590</td>
<td></td>
</tr>
</tbody>
</table>
While medium income groups in the downtown and industrial areas generated more non-work trips with increased vehicle accessibility, households in Residential Area II, generated 0.86 fewer trips. Non-work trip generation remained unaffected in the residential areas. Households living in these areas live far from work places compared with those in downtown and industrial areas. Also, gasoline costs were relatively high which may have discouraged individuals from using vehicles to make recreational trips. access to private vehicles did not appear to affect non-work trip generation.

Low income groups in downtown areas made more trips with increased in household size and high income groups made more total trips in other areas. High and very high income groups in residential and industrial areas were more likely to make more non-work trips compared with other groups, adding more total trips. These groups of households could afford recreational and social trips more often than the low and medium income groups.

Low income groups in residential and industrial areas made more walk trips. High and very high income groups generated fewer walk trips compared with other groups in the study area.

**Conclusions**

These findings suggest that zonal-based modeling was not suitable for this Third World area because of nonhomogeneous, socioeconomic characteristics and significant differences in the behavior of similar groups residing in different areas.

**These findings suggest that zonal-based modeling was not suitable for this Third World area because of nonhomogeneous, socioeconomic characteristics and significant differences in the behavior of similar groups residing in different areas.“**

Low income groups belonging to Residential Area I were observed to be more sensitive to income and motorcycle and bicycle accessibility. Medium income groups were more sensitive to household size, vehicle and motorcycle accessibility. High and very high income groups were sensitive to vehicle accessibility. Access to motorcycles increased non-work trips generated by all the income groups. Vehicle accessibility measures resulted in generation of more work and non-work trips among high and very high income group households of Residential Area I. Households with male heads were likely to generate more non-work trips among very high income groups, while they were likely to generate fewer non-work trips among medium income groups.

Residential Area II showed that low income groups were more sensitive to income and high income groups were more sensitive to household size. An increase in household size increased the total trips generated by the household. Access to any motorized or nonmotorized vehicle was likely to reduce walk trips among all income groups in the Residential Area II, while it increased work trips between medium income groups and increased non-work trips among very high income groups.

There appeared to be less sensitivity to income of the households residing in the industrial areas. The vehicle accessibility measure increased non-work trips among the medium income groups. Access to motorcycles increased work trips among very high income groups. Low income groups were more sensitive to the gender of the head of household. Households with male heads were likely to generate more work trips among low income groups. These households also were likely to generate more non-work trips among medium income groups.
The tripmaking pattern of the high income groups and the low income groups was more predictable. Many medium income group households relied on several additional economic activities outside regular employment to supplement household income. This may have resulted in inaccurate reporting of income. On the other hand, the low income groups had more consistent economic activities. Similarly, the high income group households had a more predictable lifestyle. Therefore, the travel behavior of high and low income groups was more stable and predictable than medium income households.

Increased access to motorcycles led to more trips. Bicycles were, in general, thought of as unsafe for travel. Therefore, their usage was less compared with motorized vehicles. Also, the advantage of a motorized vehicle over a nonmotorized vehicle, in terms of speed and comfort, led increased use of motorized vehicles.

While access to a private automobile was common among the high income groups, other income groups mostly had access to bicycles and motorcycles. This may be attributed to the relatively high maintenance and operational costs, including the large capital investments associated with private vehicle ownership. One interesting observation in the downtown areas was that low income households were found to have more access to private vehicles than in other areas. Although, this group had access to private vehicles, they were used less for making either work or non-work trips. (It was a common practice in Dar-es-Salaam between the low and high income groups to operate private vehicles as taxis, an additional source of income. Also, though the head of household may be primarily employed in a particular industry, other economic activities may be carried out, such as small businesses. Such income may be unreported.)

Some inconsistencies in the reporting of the information led to poor understanding of actual travel patterns. Often, housekeepers hired by the high income groups made a greater proportion of trips for the employers, such as short trips to grocery stores and so on. Therefore, these trips may not be reported. Unlike the high income groups, low income groups live on a day-to-day wage basis and make basic trips for living daily. The high income groups may make such trips weekly or biweekly. For similar reasons, there was no accurate account of the income earned by low income families.

Gasoline and other fuels are relatively expensive in most Third World countries. Also, the capital, operating, and maintenance costs for private vehicles may be cost-prohibitive for the low, medium, and high income groups. Therefore, a very small proportion of the households in Third World countries own private vehicles.

In general, it appears that low income groups in Dar-es-Salaam were more sensitive to income. Medium income groups trip patterns were less predictable. High and very high income groups were sensitive to vehicle and motorcycle accessibility. While vehicle accessibility reduced walk trips among all income groups, it increased work trips among low income groups, increased non-work trips among medium income groups, and increased both work and non-work trips among high and very high income groups.

Medium income group households in Residential Area I were likely to generate more non-work trips with access to private motorcycles, while those residing in Residential Area II were likely to generate more work trips with access to private motorcycles. Households with male heads in the downtown area were likely to generate fewer trips while those in industrial areas generated more trips.

People living in the downtown area were closer to commercial and shopping centers. If the head of household was male, it was likely that he produced only work trips; the women in the house made all the shopping trips. However, people living in industrial areas lived far from the commercial centers of the town and appeared to be required to make long trips. Thus, men in these households made additional trips.

A variety of transportation modes were available for use in this study, including
walking, the most common in the Third World countries. Research on mode choice calibration can be recommended for further study. Improvements in the operations of transit facilities and services, frequency, behavior of the poor.

SELECTED BIBLIOGRAPHY


Many urban communities in the southeastern United States will be experiencing periods of increased growth in population and land use development in the next 10 to 20 years. Along with this trend, there will be corresponding increases and changes in the demand on the existing urban transit systems based on many factors including ridership satisfaction. To remain viable, these transit systems have begun ridership satisfaction data collection efforts to aid both long and short-term strategic planning.

This paper discusses ridership satisfaction as it relates to the theme of the symposium of African-American Mobility Issues, "Exploring New Frontiers." The project task includes:

1. existing models assessment;
2. candidate model review;
3. data collection assessment; and
4. comparison with data collection.

Finally, conclusions from the research and recommendations for future research will be discussed.

"Exploring New Frontiers," the theme of the 1995 symposium on "African-American Mobility Issues" is an ideology that results from many factors and choices. One factor is ridership satisfaction, which encompasses the desire of African-Americans, as well as all people, for a safe, clean, and efficient mass transit system. Attempting to fulfill this desire, the research project focuses on techniques to measure how the transit rider is satisfied with the mass transit system.

The "techniques" used to measure ridership satisfaction are mathematical models developed through various research efforts. The first task in the research effort was to conduct a literature review of related ridership satisfaction models. The search used information systems, such as Library User Information System (LUIS) and databases (Transportation Research Information System (TRIS)). The review resulted in the collection of 295 abstracts, 38 reference articles, and eight survey instruments.

The reference articles and survey instruments, once reviewed, generated three distinctive groupings of components relating to ridership satisfaction. There were 40 ridership satisfaction variables derived from the various references. Eighteen actual ridership satisfaction components were identified. The final grouping consisted of 17 weighted factors that affect the significance variables. Figure one details the ridership satisfaction components. Seventeen distinct mathematical models were identified from the reference articles. From the 17, two models were selected for further study; Transit Planning Model for Small Cities by Chedda and Goal Programming Model for Urban Transit Assessment by Hawthorne. The two models were combined into a hybrid system as shown in Figure one.

Goal Programming, developed by Sang Lee, is a modification and extension of Linear Programming. The method allows for simultaneous solutions of complex objectives. The objectives may comprise a single...
The goal programming approach is used due to the nonhomogeneous nature of units of measure integrated in the modal simulation equations and allows for changes in the ridership satisfaction characteristic variables.

Based on the research, the following conclusions were developed:

- Although transit systems are now looking at ridership satisfaction characteristics, a review of the literature reveals that in recent years few ridership satisfaction models have been developed for small to medium sized transit systems.
- Based on the possible data that would be available to transit planners in defining the parameters of a ridership satisfaction characteristic model, a system with a fixed variable input and fixed output would not meet the needs of the transit planner.
- The recent advances in computer hardware and software technologies, for example, the Pentium and Mathcad, have made the use of mathematical models more practical for decisions analysis in non-academic environments.
- Of the 17 models reviewed, two models were determined to fit the criteria of the research project - evaluation of existing models that consider ridership satisfaction for small to medium urban transit systems. This assessment may be used as a guide for system changes that will reflect the desires of the community. The two selected models were Transit Planning Methodology for Small Cities by Chedda and Mulnazz and Goal Programming Approach to Assessing Urban Transit Systems by Hawthorne and Lee. A hybrid model was developed using a combination of both models.

- Ridership satisfaction has not been a specific objective in the information from the literature review and model evaluations. Ridership satisfaction was observed as a peripheral result of various research efforts.

The following recommendations were presented:

I. The goal-programming model should be studied to determine its practicality as a transit management planning tool.

II. A survey instrument should be developed that will enhance the use of the goal programming model.

III. Other model studies should be conducted to consider other decisionmaking tasks or models for evaluating system changes that will reflect the desires of the community.

IV. Information from the survey instrument should define the model parameters and variables.

V. Software must be found or developed adequately to use the ridership satisfaction variables.

With periods of increased growth in population and land use development and increases and changes in the demand on the existing urban transit systems, transit systems have begun ridership satisfaction data collection efforts to aid both long and short-term strategic planning. Ridership satisfaction encompasses the desire for African-Americans, as well as all people, for a safe, clean, and efficient mass transit system. The research project presented techniques to measure how the transit rider is satisfied with the mass transit system. The efforts of the literature search were presented, the information systems (such as Library User Information System (LUIS)) and databases (Transportation Research Information System (TRIS)) and the related collection of 295 abstracts, 38 reference articles, and eight survey instruments. Three distinctive groupings of components relating to ridership satisfaction were presented, 40 ridership satisfaction variables, 18 actual ridership satisfaction components, and 17 weighing factors. Seventeen distinct mathematical models were identified. Two models, Transit Planning Model for Small Cities by Chedda and Goal Programming Model for Urban Transit Assessment by Hawthorne, were combined into a hybrid system.

The findings are that in recent years few ridership satisfaction models have been developed for small to medium sized transit systems; a fixed variable input and fixed output would not meet the needs of the transit planner; advances in computer hardware and software technology have made the use of the mathematical models more practical for decisions analysis in the non-academic environment; and ridership satisfaction was observed as a peripheral result of various research efforts. The recommendations are...
that goal-programming be studied to determine its practicality as a transit management planning tool; a survey instrument should be developed to enhance the goal programming model; other model studies should be conducted to consider other decisionmaking tasks or models for evaluating system changes; the survey instrument should define the model parameters and variables; and software must be either found or developed that will adequately use the ridership satisfaction variable responses.
Closing Remarks

Rodney E. Slater
Administrator
Federal Highway Administration

It is a pleasure to be here to help wrap up this excellent conference on African-American mobility, a subject that we all agree has received far too little attention. During the symposium many interesting issues and opportunities were discussed that related to improving the mobility of African-Americans. Innovative mobility programs and policies in several areas are testimony to what can be accomplished by harnessing the creative energies of local officials who know the needs of their customers and are empowered to meet those needs. Emerging technologies and new research that were discussed hold promise to improve transportation services available to African-Americans and others who historically have not had the mobility they need to prosper in today's society. Earlier, perspectives on ISTEA reauthorization were presented by distinguished members of both the Senate and the House, who along with the Administration, will be working over the next year and a half to make the next intermodal surface transportation act even more responsive to the needs of all segments of our society and our economy than was ISTEA.

I would like to discuss with you some trends that we are seeing in the mobility of African-Americans and what those trends mean for the quality of life and economic opportunities of African-American families. I also would like to discuss some activities that the Federal Highway Administration (FHWA), in cooperation with the Federal Transit Administration (FTA) and other partners, is pursuing to improve opportunities for African-American and other economically disadvantaged communities effectively to participate in transportation planning and project development processes. Finally, I would like to discuss how plans for restructuring the Department and programs the Department administers can promote even greater opportunities to meet the diverse mobility needs of African-American and other groups within our society.

Trends in African-American Mobility

There was discussion earlier of some trends in African-American mobility that Eric Hill and others have developed from national surveys such as the National Personal Transportation Survey (NPTS) and from local data. Several of those trends are particularly important as we at the national level try to develop policies and programs that are responsive to the mobility needs of African-Americans. First is the difference in vehicle ownership rates of African-American households compared with other groups. In 1990, 30.4 percent of African-American households did not own a vehicle compared with 8.7 percent of white households. This differential in vehicle ownership rates of African-American households compared with other groups. In 1990, 30.4 percent of African-American households did not own a vehicle compared with 8.7 percent of white households. This differential in vehicle ownership has changed little since 1980. Among all households, the percentage without a vehicle declined from 12.9 percent in 1980 to 11.5 percent in 1990. Among African-American households, the vehicle ownership rates increased less on a percentage basis; 32.5 percent had no vehicle in 1980 compared with 30.4 percent in 1990.

As expected, vehicle ownership rates in central cities are lower than in other areas for all households, but much lower for African-Americans. Forty percent of African-American households in central cities do not
own vehicles, compared to about 20 percent of white households. In an auto-oriented society, these statistics belie the real impacts on African-Americans in terms of foregone recreational, educational, and employment opportunities that would be available if they had access to a vehicle.

Related to lower vehicle ownership rates is the greater reliance of African-Americans on public transportation. Nearly 15 percent of African-American workers commute by public transportation compared with only 3 percent of white workers. One impact of this reliance on public transportation is longer commute times. Statistics from here in Florida suggest that 36 percent of those who commute by public transportation have travel times more than 45 minutes compared with only about 9 percent who commute by automobile.

Forced reliance on public transportation, however, has much more serious impacts on quality of life than longer commute times. It is a fact of life today that too many recreational, educational, and employment opportunities in urban and rural areas are accessible only by automobile. African-American families without a vehicle simply have fewer opportunities available to them than families that own vehicles. This is particularly critical with respect to employment opportunities that continue to increase faster in suburban areas than in central cities.

Planning, Environmental Justice, and Empowerment Zones

Improving the mobility of African-Americans requires more than simply adding buses or increasing the capacity of our highways. Many African-Americans cannot afford automobiles and transit poorly serves their needs. Overcoming these impediments to mobility will require special efforts by both state and local governments and community leaders to create a dialogue through which the transportation needs of the community can be identified and programs developed to meet those needs.

In passing ISTEA, Congress intended to promote increased public awareness and involvement in transportation decision-making at the state and local levels. To this end, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) aggressively supports proactive public involvement early and often throughout the decisionmaking process from planning through project evaluation and development. Specific attention is focused on processes for reaching persons who traditionally have been underserved by existing processes such as low-income or minority households and the elderly. In metropolitan areas in particular, the need to reach out in innovative ways to African-American and other groups that are not well-represented in existing planning processes is being emphasized.

FHWA is completing a reconnaissance of planning processes in metropolitan areas to identify outstanding examples of how economically-disadvantaged groups within central cities have been brought into the planning process. Based on this reconnaissance, case studies will be conducted in several areas to document factors that have led to the success of those planning processes and that may provide lessons and examples for other metropolitan areas.

Increased involvement of African-American communities in the planning process will be an important mechanism by which we implement the new Executive Order on Environmental Justice. The United States Department of Transportation’s (USDOT) plan to implement the Executive Order has not been completed, but activities are already underway to promote environmental justice in the delivery of Federal transportation programs. FHWA and FTA are participating with other USDOT agencies on a Federal Interagency Working Group on Environmental Justice. Both agencies were cosponsors of a National Conference on Environmental Justice in Chicago last November and are working on a second conference to be held later this spring at Clark-Atlanta University. There was a session earlier in the symposium on environmental justice and I will not go into any further details on the issue other than to reiterate what Gloria Jeff, Associate Administrator for Policy of FHWA, said about the Department’s absolute commitment to proactively pursuing environmental justice in all Federal transportation programs and policies.
New Technologies and the Information Superhighway

New technologies such as Intelligent Transportation Systems (ITS) and the information superhighway offer great potential to improve mobility and access to opportunities for African-Americans. This potential will not be realized, however, unless we make concerted efforts to ensure that the technologies and services are available to all segments of society, not just the well-to-do. Without special attention to the diverse needs of various groups, there is a very real possibility that differences in opportunities will increase rather than decrease.

ITS holds special opportunities for African-Americans in central cities that are now poorly served by public transportation. ITS will make public transportation safer, more reliable, and more secure. It also could allow the adoption of innovative fare systems that automatically adjust fares based on a user’s income. Improved security will be especially important to African-American communities in parts of central cities that are poorly served by buses, taxis, and other forms of public transportation. Automatic vehicle location (AVL) equipment and improved communications with dispatchers and police should make public transportation safer for both the provider and the user. ITS also affords the potential for specialized transportation services between central city residential locations and suburban employment locations. Computerized matching services much like carpool matching services could be established to identify riders going to nearby destinations.

None of the potential ITS contributions to the mobility of African-Americans will happen automatically. Public agencies and private firms implementing ITS services must consult with community groups and other service providers to understand the transportation needs of community residents. Community groups must also seek out public officials and make them aware of the community’s needs. Outreach is a major component of the ITS program, but we must be sure that officials reach out to all groups to assure that everyone benefits from ITS technologies and services.

While ITS is expected to increase African-American’s real mobility, the information superhighway should increase their “virtual mobility.” Services provided on the information superhighway will reduce the need to travel for entertainment, shopping, and education. Those without an automobile will have access to a much greater variety of activities and services than are available to them now. Perhaps more important, it also should improve accessibility to information about employment opportunities, particularly opportunities in suburban areas that are difficult to reach by transit. As with ITS, however, special efforts will be required to assure that minority communities have access to the information superhighway. Innovative programs to educate persons in the use of computers and other telecommunications equipment will be needed and programs to make that equipment available in low-income communities will be needed.

President Clinton’s Empowerment Zones-Enterprise Community Initiative is providing opportunities for African-American and other minority communities in selected distressed urban areas to reestablish the vitality that once was a part of the inner city. This initiative represents a new approach for the Federal government by recognizing that communities know their needs and know how to plan for them. Each of the selected communities developed a strategic vision for change that addresses the needs of the community by integrating economic, physical, human, and other strategies. Federal, state, local, and private resources will be used to bring these visions into being. Improving economic opportunities by creating jobs and providing training for local residents; promoting safe streets, clean air and water; commitment to family and civic responsibility; and involving the entire community are just a few of the concepts developed through partnerships by the communities.

The Empowerment Zone - Enterprise Community Initiative offers several opportunities to improve the mobility of African-Americans living in or near those areas. First, they will attract new jobs back to the central city, by that increasing the number
of jobs accessible to local residents. Second, increased employment levels will allow more residents to purchase automobiles and realize the increased mobility that comes with auto ownership. Third, the enhanced attractiveness and greater number of businesses in the areas likely will improve transit and taxi service in the area.

**Federal Program and Policy Directions**

ISTEA, of course, is a watershed piece of legislation in the evolution of our Federal transportation programs. It provides unprecedented flexibility for state and local officials cooperatively to decide how to spend Federal monies to meet their transportation needs. The Department's plan for restructuring its internal organization and program structure represents a greater change from ISTEA than ISTEA was from previous Federal highway and transit legislation. The proposed consolidation of agencies within the Department, especially the creation of an Intermodal Transportation Administration combining highways, transit, rail, and other surface transportation modes, will create an organization free of modal biases. More important, the proposed restructuring of the Department's program into just three core elements -- a unified allocation, State Infrastructure Banks, and a Federal Discretionary Program -- promises to provide even greater flexibility than ISTEA for state and local agencies to direct Federal funds toward local problems.

I close with a story about how government can sometimes be a good partner and how government can sometimes be a bad partner. I remember a story told to me many, many years ago by an elderly lady who to me was very, very special. I remember how she caught me one day after being told of what I had done in this city where she lived called Cottonplant, Arkansas, which I think gives some indication of the pain of that reality. She heard that I had sneaked to the back of a store so that I could buy some chocolate ice cream. It hurt me so bad because I really wanted the chocolate ice cream. You see, I grew up when there was not the prevalence of chocolate ice cream. I had grown up on vanilla ice cream. I remember hearing from my uncles who were a bit older than that you could chocolate ice cream in this one store, but to go there, in 1960, a five-year-old little African-American boy had to go to the back door. I remember the joy of sneaking, the joy of getting the ice cream, and its taste. Then a little later, after quite a “go” at it with my grandmother, she said, “Son, it ain’t that good.” She went on to tell me about why it was so necessary for her to make that point to me.

She said, “I once heard this story of how there were seagulls who used to live on the Florida coast. the older seagulls who would take the younger ones and teach them to fly. They would take them up higher and higher, then let them go, forcing them to learn to fly. Eventually, they would learn to fly. As they learned to fly, they flew high and could see all that was of the new horizon.

One day, government came to the beach. The beach had never been used by tourists before was opened. As the tourists came, you know how tourists are, they would bring more than they could consume. So they would leave half a banana there, half an apple there, half a sandwich there. All of sudden rather than flying high to scope out the catch of the day, the seagulls started to clear that which was left over a period that became their way of life -- just dealing with that on the surface left by others.

Suddenly government came one day and without asking the seagulls, government closed the beach. The tourists left and so did the half bananas, half apples, leftover sandwiches, and the few cans here and there. Without talking to the seagulls, the government did that, first to bring them and then to deny them. The older seagulls started to look around. The crowd was gone. The leftovers here and there, gone. They started to come to grips with their reality and the pain of that reality. The pain of it was that they had forgotten how to fly. More important, they had failed to teach their young to fly.

There is a debate today in the air of the land. The debate is about what is one
ground. It is about what the role of government will be; whether there will be set asides and affirmative action. It is about the left-overs. the people who brought us here, their vision is about something far greater. It is about the new horizons. It is about questioning whether we have forgotten how to fly.

So I say to you as one good friend to another much as Paul said to Timothy, "As you stir the memory of that faith that is within you which were first in thy grandmother, Lois, and in thy mother, Eunice, and I have encouraged within thee also; I say to thee, Timothy, stir up the faith of God that is within you. For God has not given us the spirit of fear, but love and power and sound mind."
The 1994 African-American Mobility Symposium established a forum to continue the exchange of ideas, information, and discussions of transportation planning, programming, and policy issues as they relate to the African-American population. Travel behavior and tripmaking are dynamic. Several factors affect decisions to travel, by what mode, and at what time of the day. The public policymaking process likewise is dynamic. The Presidential and several Congressional elections will take place in 1996. ISTEA is scheduled for reauthorization in 1997. These issues and many others will impact the African-American community.

A third mobility symposium is being developed by CUTR to be convened in 1996. The 1996 symposium will build on the knowledge gained over the past two years and will seek to develop a tactical agenda to address these issues. This process may include further refinements of the symposium format where participants are provided an opportunity to develop proposals, strategies, and implementation plans.

Over the course of the symposia, CUTR has been aided by the many contacts and relationships that have been established, renewed, and strengthened. As in past years, a steering committee will be instituted for the 1996 event.