



# RESEARCH NEWS

A Publication of the Region 2, University Transportation Research Center

Spring 2002

## CONTENTS

Is BRT Right for New York...1
UTRC Supported Student Presents at DDETF Showcase.....1
Director’s Message.....2
Research.....3
Books & Articles.....4
Education.....5
Technology Transfer.....7
Comments by icon Mentor.....8

## Consortium Members

- City University of NY
- Columbia University
- Cornell University
- Dowling College
- New York University
- Polytechnic University
- Rensselaer Polytechnic University
- Rutgers University
- State University of NY
- Stevens Institute of Technology
- University of Puerto Rico

## Is BRT Right for New York?

The UTRC hosted the New York Regional Workshop on Bus Rapid Transit that met on November 29, 2001 at City College of New York to discuss that question. The Workshop theme, “ Bus Rapid Transit – Building the Case for a New Mode Choice in New York” addressed a one-day learning experience designed to educate and inform transportation professionals and decisions-makers about BRT. Sessions and panels discussed the potential for better service for existing riders, attracting new riders to the improved service, and improved efficiency of operations for transit providers. The Workshop demonstrated that BRT could be an effective low cost alternative to expensive new rail transit. It was concluded that BRT and compact, pedestrian-oriented land use are mutually supportive.

Bus Rapid Transit is a rapid mode of transportation that combines the quality of rail transit and the flexibility of buses. The rubber-tired BRT vehicles operate over a variety of travel ways – exclusive lanes on mixed traffic arterial streets or separate rights-of-way, or on free flowing freeway HOV lanes. Relative to existing transit buses, the BRT offers reduced travel times. New technologies and ITS systems can be easily integrated into the BRT.

The complete BRT system combines flexible service and new technologies to improve customer service and reduce traffic delays. Urban corridors are prime candidates for the BRT system. BRT express commuter service can help reduce rush hour congestion to urban areas and employment centers. The National Transit Institute in cooperation with the Federal Transit Administration sponsored the Workshop. The participating agencies included: New York State Department of Transportation, New York City Transit Authority, and New York Metropolitan Transit Council.

## UTRC Supported Student Presents at DDETF Showcase

Ellen Thorson, a 2001 recipient of the Dwight David Eisenhower Transportation Fellowships Award and a 2000 recipient of the UTC Outstanding Students of the Year Award, presented a paper on the “Integrative Freight Market Simulation (IFMS)” at the 2002 Dwight David Eisenhower Transportation Fellowship Showcase in Washington, DC. The IFMS is a National Science Foundation-sponsored research project, which involves the development of a comprehensive freight transportation demand model that depicts both commodity flows and vehicle trips. This model has a two-level solution approach. One level deals with the economic problem of estimating the provision of freight service consistent with market equilibrium and profit maximization, while the other level deals with the network problem of constructing tours which are consistent with the economic solution and other system constraints. The IFMS will enable researchers to estimate freight origin destination matrices based on secondary information, model the flow of both commodities and commercial vehicles, incorporate logistic information into the freight planning process, and study the impact of real-time traffic control on commercial vehicle traffic.

## Calendar

Visiting Scholars Seminar  
April 19, 2002.  
New York Technology College  
"Reauthorization of TEA-21"  
Speaker: David Burwell, CEO  
& President, STPP

Visiting Scholar Seminar  
June 21, 2002  
New York Technical College  
"Transport for London:  
Discussion of Modern  
Transportation Governance"  
Speaker: Jay Walder  
Transport For London

2nd Annual New York/New Jersey  
Regional Aviation Symposium  
May 7, 2002  
The Rudin Center for  
Transportation Policy and Man-  
agement at the Robert F. Wag-  
ner Graduate School of Public  
Service.  
New York University  
(See Page 7)



# Director's Message

Robert "Buz" Paaswell, Ph.D.  
Director & Distinguished Professor

The dramatic, tragic events of September 11, 2001 are past. Now, we are planning for the future of New York City. As the City plans for the rejuvenations and rebuilding of the World Trade Center site, and remembering of the event with appropriate memorials, the challenges to the City planners and transportation professionals of the region are to provide guidance and engineering decisions for equitable land usage and transportation analysis to enhance the economic boom that will result from the rebirth of lower Manhattan.

The economics decisions for rebuilding the city are the responsibility of all New York. World banking, trade, and the financial institutions are the chief economic resource of New York City. New York City must maintain this dominance in the future as it does now. New York State's second largest industry is domestic tourism. Undoubtedly, New York City is the main destination of domestic and foreign tourists. Tourism is at the heart of New York City's economy. New York City's educational institutions are providing the expertise so very important to these decisions.

By its interaction with University consortium members and its agency partners, the UTRC is in a unique position to provide expertise for urban planning decisions and transportation issues that will impact lower Manhattan. In September 2002, the UTRC will complete the NJDOT Study, "New Jersey's Link to the 21<sup>st</sup> Century". This exciting study has generated twelve Working Papers and the Final Summary Report to assess the nature and impact of transportation infrastructure investments on economic development of New Jersey. Recently, the NYSDOT asked the Center to build scenarios that will influence the New York State infrastructure investments. The UTRC with its research consortium and partners is currently conducting fourteen research projects, which are significant to the Region 2 area.

The UTRC is an important transportation research resource and leader for the growth, rejuvenation and rebuilding of the New York – New Jersey Metropolitan area. Peace be with you.

*Dr. Robert E. Paaswell*  
*UTRC Director*

*Robert F. Baker*  
*Research & Technology Transfer*

*Camille Kamga*  
*Administration & Information Technology*

*Research News is published semi-annually by the Region2, University Transportation Research Center (UTRC) which is located at the Institute for Transportation Systems, The City College of New York, Y-Building, Room 220, New York, NY 10031. Editorial inquires can be made by calling 212-650-8050. For information on our programs or to notify us for an address correction E-mail: rbaker@fid1s0.engr.cuny.edu.*

---

# Research

## **Mathematical Formulation of Deterministic and Stochastic Parking Reservation Systems (PRS) with Fixed Costs,** by Kyriacos C. Mouskos, Ph.D. Research Professor, Institute for Transportation Systems

A problem faced in major metropolitan areas, is the search for parking space that results in tremendous loss in productivity time, excess pollution, and driver frustration. The most traditional methods utilized to alleviate the search for parking are fixed signs to parking lots, variable message signs that continuously update the number of available parking spaces at specific parking lots, route planning algorithms from an origin to a specific parking lot, as well as disincentives to the use of personal

automobiles through parking pricing and strict enforcement of parking violations.

An innovative methodology to address at least partially the search for parking is through a Parking Reservation System (PRS). Two mathematical formulations were researched for the deterministic and stochastic PRS. The deterministic formulation minimizes the total system wide cost for all vehicles subject to the assignment and the parking lot capacity constraints.

The objective function of the

stochastic mathematical formulation is to minimize the expected system wide cost for all the users. Both mathematical formulations can be solved with any commercially available linear programming solver, yielding binary integer solutions. Realistic large-scale problems for the deterministic case were solved using the CPLEX software within 20 seconds indicating that real time solutions are feasible.

## **Evaluation of Graduated Driver Licensing in New Jersey – Phase 1**

Raghavan Srinivasan, Ph.D. Dowling College; Claire McKnight, Ph.D. City College of New York

New Jersey implemented a graduated driver licensing (GDL) on January 1, 2001. The objective of GDL is to reduce crashes involving novice teenage drivers by providing practice and supervision over an extended period of time. In this program, teenagers are required to go through a three-stage process instead of the conventional two-stage process before getting a basic unrestricted license.

The overall objective of this multi-phase project is to evaluate the effectiveness of the GDL program in New Jersey. Phase 1 of the project

has been completed, and involved a detailed review of the literature, and the analysis of data from crashes and violations in New Jersey from 1998, 1999, and 2000, (before the implementation of GDL) to study the characteristics of crashes and violations involving teenage drivers compared to drivers in other age groups.

The review of the literature indicated other states and jurisdictions that have implemented their own versions of GDL have seen a reduction in crashes involving teenagers, although the magnitude of reduction varied significantly.

The analysis of crash data from New Jersey revealed that teenagers were over-represented in crashes that occurred after dark, in single-vehicle crashes, and in crashes due to unsafe speed. Compared to middle-aged drivers, seventeen year olds were over-represented in left-turn crashes, and crashes that occurred due to the failure to yield, or obey traffic control devices. Over the next two years, the effectiveness of the GDL program in reducing crashes involving teenager novice drivers will be studied.

# *“Planning and Management of Regional Transportation Systems”*

---

---

# Books & Articles

## *New Departures: Rethinking Rail Passenger Policy in the Twenty-First Century,*

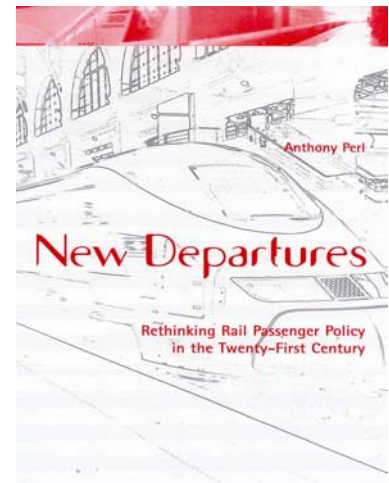
By Anthony Perl, Ph.D., Visiting Professor at the CUNY Institute for Urban Systems.

At a time when Americans are taking a close look at their transportation system's future and Amtrak's fate is again being debated, *New Departures: Rethinking Rail Passenger Policy in the Twenty-First Century* provides a compelling explanation of what needs to be done to transform passenger trains into a viable and effective method of transportation in America. In his book, Professor Anthony Perl develops a comprehensive diagnosis of America's passenger train problem. He gets to the bottom of what went wrong with passenger train operations in the U.S. and interprets this in light of what went right in successful efforts to reinvent the passenger train abroad.

*New Departures* analyzes why Amtrak wound up on a policy side track instead of reinventing the passenger train. Amtrak became entangled in a political stalemate between skeptics who saw no use for trains in America's passenger transport network and supporters who sought to preserve (and expand) a national network of traditional passenger trains. The book also chronicles decades' worth of false starts with high-speed train development initiatives in California, Ohio, Texas, and Florida. Lessons are drawn from these failed experiments as well as from North America's only real commercial success with passenger railroading—the New York–Washington *Metroliner* and *Acela*

service—to show what has worked in the limited efforts to reinvent passenger trains in the U.S.

*New Departures* is published by the University Press of Kentucky at \$29.95 (hardcover).



---

## *Accessibility Improvements and Local Employment: an Empirical Analysis,* By Joseph Berechman and Robert Paaswell, Journal of Transportation and Statistics, April 2002.

In this paper we hypothesize that the local supply of labor (connoting here labor force participation) is affected, inter-alia, by the level of accessibility to employment locations. Specifically, we pose that improved accessibility in a given area, resulting from transportation infrastructure investment, will positively affect the willingness of individuals liv-

ing there to increase their labor participation, given their socio-economic and locational characteristics. It is further proposed that this effect will be more pronounced in low income areas where costs of labor market participation, including transportation costs, constitute a real barrier to market entry. Using a simultaneous regression equation model, the paper empirically ex-

plores the impact of accessibility changes on supply of labor in specific job types in the South Bronx, New York, which is an economically distressed area. The major sources of data for this study are three US Census data files from the 1990 Census Transportation Planning Package.

---

# Books & Articles

*Estimation And Evaluation Of Full Marginal Costs Of Highway Transportation In New Jersey*, By Kaan Ozbay, Bekir Bartin and Joseph Berechman, Journal of Transportation and Statistics, Volume 4(1), April 2001.

This study presents a methodology for estimating full marginal transportation costs of highway transportation in NJ. This methodology is specifically applied to Northern NJ highway network. We reviewed the existing studies, and identified the highway transportation cost categories. Cost functions are developed using NJ specific data for each cost

category. Along with the total cost functions, marginal costs functions are derived as well. These marginal cost functions are used in the application of our full marginal cost estimation methodology. Finally, the resulting marginal cost values for Northern NJ are analyzed according to various trips distances, urbanization degrees and highway functional types.



---

# Education

## Student of the Year Awarded to Mayrai Gindy

On January 14, Mayrai Gindy, the UTRC Student of the Year, was honored at the 11<sup>th</sup> Annual Student of the Year Awards at TRB. Ms. Gindy is currently pursuing her doctorate degree in civil and environmental engineering at Rutgers University. She received her bachelors of science degree in civil engineering, also from Rutgers, with a 4.0 grade point average and at the top of her class.

As a graduate student, Mayrai has received the AITE Graduate Scholarship, a Center of Advanced Infrastructure and Transportation Graduate Fellowship, and a National Science Foundation Graduate Fellowship. Her current research project is the Instrumentation and Monitoring of the New Doremus Avenue Bridge, in Newark, New Jersey. The Doremus Avenue Bridge is the first part of the Portway International/International Corridor Program, a series of freight improvement projects. It is also the first bridge to be designed according to the new Load and Resistance Factor Design (LRFD) – American Association of Transportation Official

(AASHTO) Bridge Specifications in the State of New Jersey.

Mayrai is currently in the process of writing a technical paper, “Development of a Reliability-Based Model for Deflection Limit State in Girder Bridges” with her academic advisor, Dr. Hani Nassif, for the IABMAS (International Association for Bridge Maintenance and Safety) conference in Barcelona, Spain, the first international conference on bridge maintenance, safety and management.



*“Everything  
Should be  
made  
As simple  
As Possible,  
But not  
more so.”*

*Albert Einstein*



---

# Education

## UTRC Supports Student Chapter of WTS

UTRC has made a grant in support of the student chapter of the Women's Transportation Seminar at City College of New York. The President of the student chapter, Ria Lee Shue Ling, plans to use the money to hold several programs for the members, including a career workshop and a Communication Workshop. The Career Workshop (to be co-sponsored by the WTS student chapter at Cooper Union) includes a panel of professionals on how to get the first job, job search strategies, and mock interviews to build confidence. The second program will be held at City College and will stress how to communicate with non-technical audience for technical professionals.

### Undergraduate Program in Transportation

The University Transportation Research Center and the Institute for Transportation Systems at the City University of New York offer an undergraduate program in transportation education. The objective of the program is to encourage undergraduates, especially women and minorities, to pursue studies in transportation, planning, urban affairs and economic development. The program is available to both students currently matriculated at a college or university, in an Associates or Bachelors degree program, as well as transportation agency/industry employees who demonstrate an interest in furthering their education. Scholarships are earmarked in amounts up to a maximum of \$2,500. Scholarship recipients must include internships, and research assistantships as well as course work in their programs of study, and are awarded pro-rated payments from the overall award when they achieve grades of B+ or higher in those studies.

Contact: 212-650-8050.

## Advanced Institute for Transportation Education

### Graduate Scholars Program

Sponsored by:

**Region II University Transportation Research Center  
and**

**U.S. Department of Transportation**

Financial support for Masters students in transportation is available for outstanding students who attend a participating university; see list below. Scholarships are available both to people entering the transportation field for the first time and to people already working for transportation agencies and companies. The scholarship provides:

#### For full time students:

- Free tuition for three semesters or up to a value of \$10,000
- Monthly stipend for one year (total value not more than \$10,000)
- Experience in transportation research
- Professional exposure and recognition

#### For employees of participating agencies:

- Free tuition for four semesters or up to a value of \$10,000
- Ten hour per week paid work release during semester

For further information, contact Dr. Claire McKnight, AITE Coordinator at (212) 650-8050 or:

AITE Graduate Scholars Program  
University Transportation Research Center  
City College of New York  
New York, New York 10031

---

# Technology Transfer

## University Transportation Research Center Regional Transportation Initiatives Conference

The UTRC sponsored a one-day conference on November 8, 2001 at City College of New York to focus on the transportation research needs of our regional partners and the public they serve. The morning session contained presentations from regional agencies on issues of topical concern that will lead to research programs or projects. The afternoon sessions focused on building a research agenda.

The conclusions of the conference were that transportation agencies must recognize the multi-disciplined nature of transportation. The provision of transportation facilities and infrastructure lies in physical sciences and the implementation and organization aspects lie in the political sciences. Some of the topics for further research are system development and operations, environmental assessment and traffic safety. Additional issues of the region's agenda included: security and surveillance, evacuation and investment redundancy.

## NJDOT Third Annual Research Showcase

The UTRC sponsored the Research Showcase on October 12, 2001 at Princeton University. The major focus of the Showcase was to demonstrate to all participants the broad spectrum of NJDOT research topics. The Showcase emphasized the problems and issues related to moving goods and freight into and out of the State. The UTRC, Rutgers University, New Jersey Institute of Technology, and Rowan College highlighted their ongoing intermodal research projects and a panel discussed the topic: "New Jersey's Intermodal; Imperative: Creating a World Class System for Worldwide Trade."

## Freight Forum For the New York Metropolitan Region

The UTRC sponsored the Freight Forum for the New York Metropolitan Region at City College on February 13, 2002. The conference highlighted freight movement post 9/11, the future of the Port of NY 7 NJ, improving airport access, rail freight, and waterways for moving freight and passengers.

## VISITING SCHOLARS SEMINAR Series 2002

### MODERN FERRY TRANSPORTATION IN NEW YORK

**Arthur E. Imperatore, Jr.**  
**President, ARCORP Properties**

The UTRC sponsored the first Visiting Scholars Seminar of the 2002 at the New York Technical College on February 22, 2002. Mr. Imperatore, Jr. presented the history, current operation and future plans of NY Waterway, the country's largest private ferry operator. He discussed current and future routes, design and construction of existing and new vessels and the development of a new generation of water transportation infrastructure, including terminals and surface connections throughout the Harbor. Special emphasis was given to the impact of enhanced ferry transportation on the redevelopment of New York Harbor's formerly industrial waterfronts. Water transportation has become a serious and growing new mode of mass transit in New York Harbor, especially since the tragic events of last September 11.

## Rudin Center to Hold 2nd Annual Regional Aviation Symposium

The Rudin Center for Transportation Policy and Management at the Robert F. Wagner Graduate School of Public Service at New York University will hold its 2nd Annual New York/New Jersey Regional Aviation Symposium on **Tuesday, May 7**. This year's theme is "Rebuilding Air Travel After September 11th by Integrating Security and Service." The Symposium will be entirely devoted to the sobering new realities faced by both the aviation industry and the NY/NJ Metropolitan Region, and provides a unique opportunity to have in-depth discussions on these critical issues with senior airline executives, aviation industry leaders, federal legislators, senior governmental officials, Senior Port Authority staff, leading financial experts, and other decision makers.

---

## Comments by Icon Mentor:

## BUS RAPID TRANSIT FOR NEW YORK CITY

By Herbert S. Levinson, UTRC Icon Mentor

New York City is served by a broad array of local, limited stop and express bus service. Operating over streets and expressways their movement is expedited by the most comprehensive system of bus priority treatments in North America. There are many individual Bus Rapid Transit (BRT) components and bus passenger volumes are among the highest in the world, but there is still no integrated bus rapid transit system. While various proposals have emerged over the years, none have been implemented to date.

Why no BRT? The reasons are varied, ranging from perceived site specific problems to prevailing attitudes. Rapid transit in New York means rail, and the major emphasis has been placed on maintaining and improving rail transit systems. BRT development has also been inhibited by many competing demands for lim-

ited street and curb space, in both Manhattan and outlying boroughs. Many arterial streets where limited-stop buses run are lined with shops that require curbside access, and even where curb bus lanes are provided, enforcement is often a problem. Moreover funding suitable off-street rights-a-way for buses has been difficult.

Most bus service innovations and bus priority treatments were implemented long before the concept of “bus rapid transit” became fashionable. They were initially installed as A.M. peak period “queue” bypasses to alleviate congestion in corridors not well served by rail transit, rather than as integrated BRT systems. More importantly, they were installed in an environment with an extensive network of rail rapid transit and commuter rail lines. Rapid transit in New York means “rail,” and the major emphasis has been placed on maintaining and improving

the rail service.

Nevertheless, there are several opportunities for developing bus rapid transit. Limited stop bus service along major arterials as the Grand Concourse and Flatbush Avenue can be upgraded. A BRT route could be established on First and Second Avenues. If continuous connection routes are built along the Cross Bronx Expressway, BRT could be provided from the George Washington Bridge Bus Terminal to Parkchester. And, on Long Island the little-used rail line straddling the Roosevelt Field and Mitchell Field activity center could be converted to BRT. And, there are also selected opportunities in New Jersey.

The opportunities are good, and the challenges great. But BRT does have a place in Greater New York in the 21<sup>st</sup> Century.

---

University Transportation Research Center  
City College of New York  
Y-Building, Room 220  
New York, New York 10031