# Data Management Group
# Annual Report
# 2006

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# INTRODUCTION

The Data Management Group (DMG) was established in 1988 on the basis of a proposal from the University of Toronto's Joint Program in Transportation for an autonomous research group with the following objectives:

a) establish a common, centrally-accessible database containing information on transportation activities, zone systems, transportation networks and land use activity,
b) provide a transportation data retrieval service to the participating agencies,
c) monitor the adequacy of available data and propose approaches for adding to or updating the data as mutually agreed upon by the agencies,
d) promote greater interaction between university researchers and practitioners in the field of urban transportation planning,
e) promote the communication of transportation information and data obtained or administered by the Data Management Group to interested agencies and to the public,
f) further the improvement of transportation demand analysis, research, and forecasting in the Greater Toronto Area.

The DMG has been guided by these objectives into its 19th year of continuous operation.

Program approval and funding of the DMG is the collective responsibility of members of the Transportation Information Steering Committee (TISC) with the following membership:

City of Hamilton
City of Toronto
GO Transit
Ministry of Transportation, Ontario
Regional Municipality of Durham
Regional Municipality of Halton
Regional Municipality of Peel
Regional Municipality of York
Toronto Transit Commission

Each participating agency appoints a member of their technical staff to the Transportation Research and Data Management Group (TRADMAG), which is a standing committee of TISC, and is responsible for coordinating the needs of the funding agencies and the activities of the research project.

This report provides a brief profile of the staff employed during the calendar year 2006 and a description of the activities undertaken by the DMG under the headings of information processing, computer resources and technical support.

## STAFF AND LOCATION

The DMG is located in offices at;

Joint Program in Transportation
University of Toronto
Galbraith Building, Room 305
35 St. George Street
Toronto, Ontario M5S 1A4
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The Joint Program in Transportation provided administrative support in 2006 through their Administrative Officer and Financial Manager, Lorine Jung.

Full-time Technical Staff in 2006

Susanna Choy, B.A.Sc. (Industrial Engineering), M.Eng. (Civil Engineering) University of Toronto, P.Eng.
Reuben Briggs, B.A.Sc. (Civil Engineering), M.A.Sc. (Civil Engineering) University of Toronto, P.Eng.

Urban Transportation Planning Interns in 2006

Daniel Samson, B.A.Sc. (Civil Engineering) University of Toronto
Sabrina Khan, B.A.Sc. (Civil Engineering) University of Toronto

Computer Programmer (2006 TTS Software Development)

Michael O'Cleirigh, B.Computing (Computing & Information Science), University of Guleph

Summer and Part-Time Students in 2006

Renno Fo Sing, B.A.Sc., Department of Electrical and Computer Engineering, University of Toronto
Jamshaid Muzaffar, 3rd year undergraduate, Department of Civil Engineering, University of Toronto

Part-time Director

Gerald N. Steuart, Professor Emeritus, Department of Civil Engineering, University of Toronto

Data Management Groups Web Site

http://www.jpint.utoronto.ca/dmg/

## INFORMATION PROCESSING

The term 'information processing' is used in this instance to describe a set of activities supporting the management, storage and distribution of urban travel information. The principle components of this information are the results of the Transportation Tomorrow Surveys and a collection of all Cordon Count surveys.

Transportation Tomorrow Surveys

Under the guidance of TISC, a series of urban travel surveys have been conducted every five years since 1986. The DMG administers the data files on urban travel contained in the 1986, 1991, 1996 and 2001 Transportation Tomorrow Surveys in the form of a set of relational databases with various methods of access. Direct access to the original files is restricted to DMG staff to ensure that information on a particular household cannot be identified. Data files on 1986 travel contain detailed information on 370,000 trips taken by 171,086 individuals residing in 61,453 households. The data files for the 1991 survey contain 157,349 trips taken by 72,538 individuals residing in 24,507 households. The data files for the 1996 survey contain 657,971 trips taken by 312,781 individuals residing in 115,193 households. The data files for the 2001 survey contain 817,744 trips taken by 374,182 individuals residing in 136,379 households. The increasing size of the databases reflects not only growth in the area but also an increase in the size of the area surveyed.

Originally, a staff member at the DMG processed every request for travel information and stored the results in a computer file that was then forwarded to the end user. More than ten years ago, staff at the DMG developed the text-based data retrieval system (drs) as the original method for external users to gain access to the data files and complete the data extraction themselves. This retrieval system was very effective when a modem was used as the principle method of remote access to the DMG's computer system. Over the past ten years, as the demand for travel data grew and the Internet became the preferred method of remote access, a data retrieval system specifically designed for Internet access was developed (iDRS). The resources required to keep two systems operational are becoming too costly and the drs process was phased out. During the phasing-out period, all the attractive features of drs were incorporated into the browser-based iDRS.

Use of the iDRS access procedure has grown significantly since it was first released in 1998. The initial release was restricted to use by the funding agencies. As the DMG gained more experience with the procedure and continuous improvements were made, more users were allowed access. In 2002, the iDRS procedure was made available to any individual that requested access. The individual is required to sign an agreement form and system security is maintained by giving each user a unique login and password. This procedure has the added benefit that agencies outside the GTA plus Hamilton that participated in the 1996 and 2001 Transportation Tomorrow Surveys can access their data without the need to set up their own database system. Use of the system

is carefully monitored to be certain all users are given reasonable service. The system is currently providing excellent service to all users, consequently, in 2004 the DMG implemented an online procedure for requesting access to iDRS.

A majority of data requests processed by iDRS use one of the several zone systems that have been defined by the participating agencies over the years. In 2004, the DMG completed the task of assigning travel data for all TTS to the newly defined 2001 GTA zone system. The result is that users can trace historical trends using a consistent spatial definition.

The iDRS procedures are reasonably complex, therefore, the DMG staff compiled a user's manual in 2004. The manual is available to all existing and potential users at
http://www.jpint.utoronto.ca/PDF/doc102.html
Access through iDRS needs to be used in conjunction with the latest description of the data files, which is documented in the publication '2001 Transportation Tomorrow Survey: Data Guide', available at
http://www.jpint.utoronto.ca/PDF/doc96.html

Summary of Browser Based 'iDRS' Data Requests in 2006

| **Month** | **Number of Data Queries** | **Number of Sessions** |
|---|---|---|
| January | 1276 | 283 |
| February | 1000 | 218 |
| March | 1448 | 238 |
| April | 425 | 118 |
| May | 1199 | 154 |
| June | 475 | 107 |
| July | 576 | 116 |
| August | 667 | 119 |
| September | 311 | 65 |
| October | 490 | 99 |
| November | 1115 | 177 |
| December | 387 | 77 |
| **Total 2006** | **9369** | **1771** |
| **Total 2005** | **10654** | **2032** |

Browser Based 'iDRS' Users in 2006

BA Consulting Group
Cansult Ltd.
Centre for Sustainable Transportation
City of Brampton
City of Guelph

Browser Based 'iDRS' Users in 2006 (continued)

City of Mississauga
City of Peterborough
City of Toronto
Cole Engineering Group
Community Development Halton
Dillon Consulting Ltd.
EarthTech Inc.
Entra Consultants
Environmental Defence
Giffels Associates Ltd.
GO Transit
Halcrow Consulting
IBI Consulting Group
iTrans Consulting Ltd.
Lakehead University
LEA Consultants
Marshall Macklin Monaghan Ltd.
McCormick Rankin Consultants
McMaster University
Ministry of Transportation, Ontario
Neptis Foundation
NRG Research Group
Peter Dalton Consulting
Poulos & Chung Ltd.
Queen's University
Region Municipality of Durham
Region Municipality of Peel
Region Municipality of York
Sernas Transtech
Smart Commute Association
Tedesco Engineering
Toronto Transit Commission
Town of Caledon
Trent University
University of Toronto
University of Waterloo
Wentworth Consulting Inc.
York University

Special Data Requests

The interactive procedures available with iDRS satisfy the majority of data needs. However, some data needs are too complex and require the intervention of an experienced analyst to formulate a custom query from the database. In addition, the DMG's staff can often help define the most relevant data for the problem at hand. Although special data requests are an important function, an objective of the DMG continues to be to reduce the number of such data requests in favour of users processing their request through iDRS. There were 7 special data requests from funding agencies and the research community in 2005 and 4 in the year 2006. The following is a brief description of the special data request in 2006:

2001 TTS trip coordinates were requested by Jesse Coleman for his M.A.Sc. thesis under the supervision of Professor Eric Miller.

Tabulations of 2001 TTS trips by travel mode, trip origin and destination were prepared for IBI for the carpool/rideshare study for the Ministry of Transportation, Ontario.

EMME/2 zone centroids were converted from projection NAD 27 to NAD 83 for the City of Toronto planning department.

2001 TTS trip information was provided to McCormick Rankin Corporation for the GTA HOV network forecast study.

Transportation Tomorrow Survey 2006

A decision to proceed with a 2006 TTS was taken in 2004 by the Transportation Information Steering Committee (TISC) and the administrative structure of the survey was approved. The responsibility for all policy and funding matters are to rest with TISC. The committee delegated the technical responsibility to a Transportation Tomorrow Survey Technical Committee with representation from all participating agencies, and gave management responsibility to a Management Team associated with the DMG. The participating agencies include the following:

City of Barrie
City of Brantford
City of Guelph
City of Hamilton
City of Kawartha Lakes
City of Peterborough
City of Toronto
County of Dufferin
County of Peterborough
County of Simcoe

County of Wellington
GO Transit
Ministry of Transportation Ontario
Regional Municipality of Durham
Regional Municipality of Halton
Regional Municipality of Niagara
Regional Municipality of Peel
Regional Municipality of Waterloo
Regional Municipality of York
Toronto Transit Commission
Town of Orangeville

The survey management team consisted of individuals with a broad range of experience based on their involvement in past TTS survey work. A decision to directly involve the DMG staff in all aspects of the Survey was proposed and approved by the Steering Committee. The objective was to have DMG staff familiar with every detail of the collection and processing of the data. Key staff for the survey includes:

Project Director, Gerald Steuart (Data Management Group)
Project Manager, Peter Dalton (Independent Consultant)
Site Manager, Sharon Kashino (Independent Consultant)
Survey Management Coordination, Susanna Choy (Data Management Group)
Coding Manager, Reuben Briggs (Data Management Group)
Manager of Training, Ian Fisher (Independent Consultant)
Software Development, Michael O'Cleirigh (Data Management Group)

The first interviewing phase began later than planned on September 16, 2005. The project experienced a series of technical and workforce problems, which had a serious impact on productivity. The slow start and low productivity were resolved by extending the interviewing period into January and February of 2006. The target of 37,000 completed interviews was reached on February 9, 2006. The second interviewing phase began on September 6, 2006. Again, a series of problems required interviewing to continue into January 2007. The target of 115,000 completed interviews for the second interviewing phase was reached on February 2, 2007.

Cordon Counts

The City of Toronto (then the Regional Municipality of Metropolitan Toronto) began collecting detailed information on the type and volume of traffic crossing selected points on the road system as early as 1975. The counting locations were selected such that screen lines or cordon lines could be defined and the counting program has continued on a regular basis since that time, usually twice in a five year cycle. Subsequently, other Regions began similar programs. Given the number of Regions with a similar program, they began coordinating

their count programs and defining a common set of definitions. In 1998, this cooperation made it possible for the DMG to assemble the most recent of such traffic counts in a common database structure and develop a Cordon Count Data Retrieval System (CCDRS). The CCDRS data files contain count information from 1975 in the City of Toronto, from 1981 in Peel Region, from 1985 in Halton and York Regions and from 1989 in Durham Region.

Participating agencies are now using CCDRS as a tool in verifying their cordon count results. The results of a 2006 Cordon Count began to be assembled in CCDRS in the calendar year 2006 and should be verified and ready for release to all users early in 2007. Access to preliminary results was restricted to the participating agencies. The CCDRS procedures are reasonably complex, therefore, the DMG staff compiled a user's manual in 2004. The manual is available to all existing and potential users at
http://www.jpint.utoronto.ca/PDF/doc104.html

Summary of CCDRS Data Requests in 2006

| **Month** | **Number of Data Queries** | **Number of Sessions** |
|---|---|---|
| January | 474 | 78 |
| February | 232 | 50 |
| March | 195 | 66 |
| April | 457 | 82 |
| May | 1145 | 164 |
| June | 199 | 84 |
| July | 270 | 83 |
| August | 82 | 30 |
| September | 81 | 30 |
| October | 219 | 63 |
| November | 206 | 50 |
| December | 51 | 18 |
| **Total 2006** | **3611** | **798** |

| | | |
|---|---|---|
| **Total 2005** | **3724** | **767** |

CCDRS Users in 2006

Canadian Imperial Bank of Canada
City of Brampton
City of Mississauga
City of Toronto
EarthTech Inc.
iTrans Consulting Ltd.
LEA Consultanting Ltd.
McCormick Rankin Consultants
Marshall Macklin Monaghan Ltd.
Ministry of Transportation, Ontario
Morrison Hershfield Ltd.
Region Municipality of Durham
Region Municipality of Halton
Region Municipality of Peel
Region Municipality of York
SNC Lavalin
Siroky Group
Toronto Transit Commission
University of Toronto

## COMPUTER RESOURCES AND TECHNICAL SUPPORT

The concept of a university research centre providing shared computer resources and technical support in the development and operation of a large-scale computer simulation of urban travel began as a small research initiative in 1989. By the year 2003, all funding agencies and several local governments had become full funding partners in the collective sharing of a computer system supporting three licences of the EMME/2 transportation planning simulation software. The current participants in the shared resource are:

City of Brampton
City of Hamilton
City of Mississauga
City of Toronto
GO Transit
Greater Toronto Airports Authority
Ministry of Transportation, Ontario
Regional Municipality of Durham
Regional Municipality of Halton
Regional Municipality of Peel
Regional Municipality of York (shared arrangement with
    City of Vaughan
    Town of Markham
    Town of Richmond Hill)
Toronto Transit Commission
University of Toronto

The DMG administers access for any representative of a participating agency or designated consultant working on a project for a participating agency. Access to the EMME/2 software is granted to a consultant on a project by project basis.

The shared computer system uses a version of the UNIX operating system. The DMG staff is aware that most of the users, both internal and external, are not familiar with UNIX and every attempt is made to simplify their experience on the shared system.

The DMG is continually searching for ways to efficiently administer and upgrade the computer system. In 2006, a significant upgrade to the disk storage system was undertaken. The increases in disk space are being implemented in a progressive fashion to minimize the disruption to existing EMME/2 users.

The developers of EMME/2 have announced the release of a new version of the software which is designed to operate at the users desktop computer. In 2006, the DMG began investigating the possible operating strategies for the new generation of software.