

Something for Everyone: The MWCOG Regional Transportation Data Clearinghouse

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Abstract

The objective for the Metropolitan Washington Council of Governments (MWCOG) Department of Transportation Planning was to develop a comprehensive transportation database robust enough to satisfy GIS professionals yet simple enough for non-technical people to use. MWCOG, like other regional associations, consists of member organizations with varying degrees of sophistication in both spatial data products and users.

Therefore, the department utilized a 'clearinghouse' approach, packaging regional data in an easy-to-use format, currently a customized Arcview application. The product, called the Regional Transportation Data Clearinghouse, is designed to be used by both GIS professionals and laypersons (such as department directors) alike.

Background and Purpose

The MWCOG Regional Transportation Data Clearinghouse is a collection of transportation related datasets for the Washington metropolitan region. MWCOG's Department of Transportation Planning (DTP) staff members have worked on developing this data archive for the better part of a decade. In its beginnings, the Clearinghouse only existed as system of file folders containing different types of transportation data. The advent of desktop GIS transformed the way users could potentially access the data files, and thus the focus shifted toward utilizing Arcview GIS as the medium to allow display, query, and analysis of the data. The first GIS-based version of the Clearinghouse came into existence in 1997. The most current version was released in December of 2002.

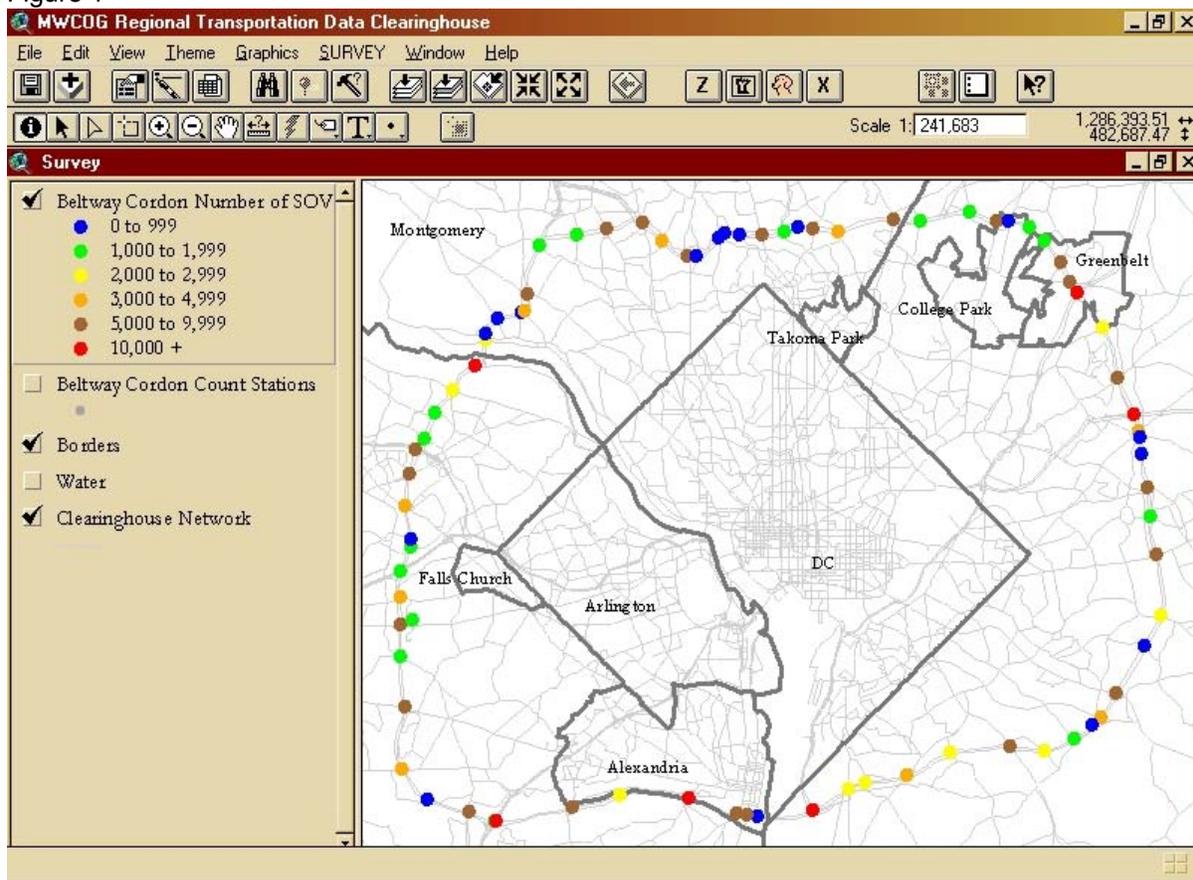
The Clearinghouse project began, and continues to be primarily a product designed for MWCOG's member jurisdictions and related agencies. The goal of the Clearinghouse project is to provide regional coverage of transportation datasets, and access to datasets that might not necessarily otherwise be easily accessible to a smaller or local jurisdiction. For example, the Clearinghouse archives traffic count data for Maryland, Virginia, and the District of Columbia for the years 1986-2000 (the most recent complete year). While traffic counts are undoubtedly important in much transportation planning work, it is not always a priority for jurisdictions to expend resources gathering such data. It is easier and faster for users to access the Clearinghouse to look up traffic counts than by contacting individual jurisdictions for the same data.

One of the key improvements with the latest release of the Clearinghouse project is its relationship to the 2191-zone modeled region network, or Masternet. This network is used by transportation modelers throughout the region as the basis of regional and local planning efforts. Prior to this release, the Clearinghouse network had strong similarities to the Masternet but was still supported as a different product. Now, the Clearinghouse street network itself is entirely based on the Masternet. The link identifier in the dataset, NDPR2, is the same link identifier used on the master network. A full set of network attributes are now contained in the Clearinghouse Network theme, along with the traditional attributes such as traffic volume and facility name (which are not carried as Masternet attributes). A new field, called Link2CLR, provides linkage between the current and older versions of the

Clearinghouse Network theme, so users may easily switch between datasets. This improvement extends the usability of the Clearinghouse as now users can easily interchange Clearinghouse and transportation modeling data to suit their needs.

Another notable feature of the Clearinghouse project is its flexibility to satisfy several types of spatial data users. The customized Arcview application (an example view is shown in figure 1) allows novice GIS users to still access much of the data available in the project. Many casual users do not have the time or desire to learn seemingly simple GIS functions such as a table join or query. The custom menus on each of the four views in the project have several options on how users can view specific datasets. Several data display options exist so inexperienced users can view a set of useful data by selecting option from a pull-down menu. For example, a novice user, perhaps such as a planning director, does not have to know how to join tables and display the view using unique values to determine the number of single occupancy automobile users observed at each MWCOG Beltway Cordon Count location for year 2001. overall, the preset data views provides casual with easy access to information.

Figure 1



More experienced Arcview users have the option to use the project as-is by utilizing the pull-down menus and pre-defined views, or can add their own additional customizations, tables, queries, layouts, etc. All of the tables and Avenue scripts used to build the application are easily accessible. A Clearinghouse project user who knows how to join tables in Arcview would be able to use any field in any table in the project to join a table with a matching field in

a table from another source. For example, a jurisdiction can join tables of model output data to the Clearinghouse network to display the model results. At least one jurisdiction has already leveraged the interoperability of the Clearinghouse and the Masternet described above, and have incorporated output from transportation model runs into the Clearinghouse environment.

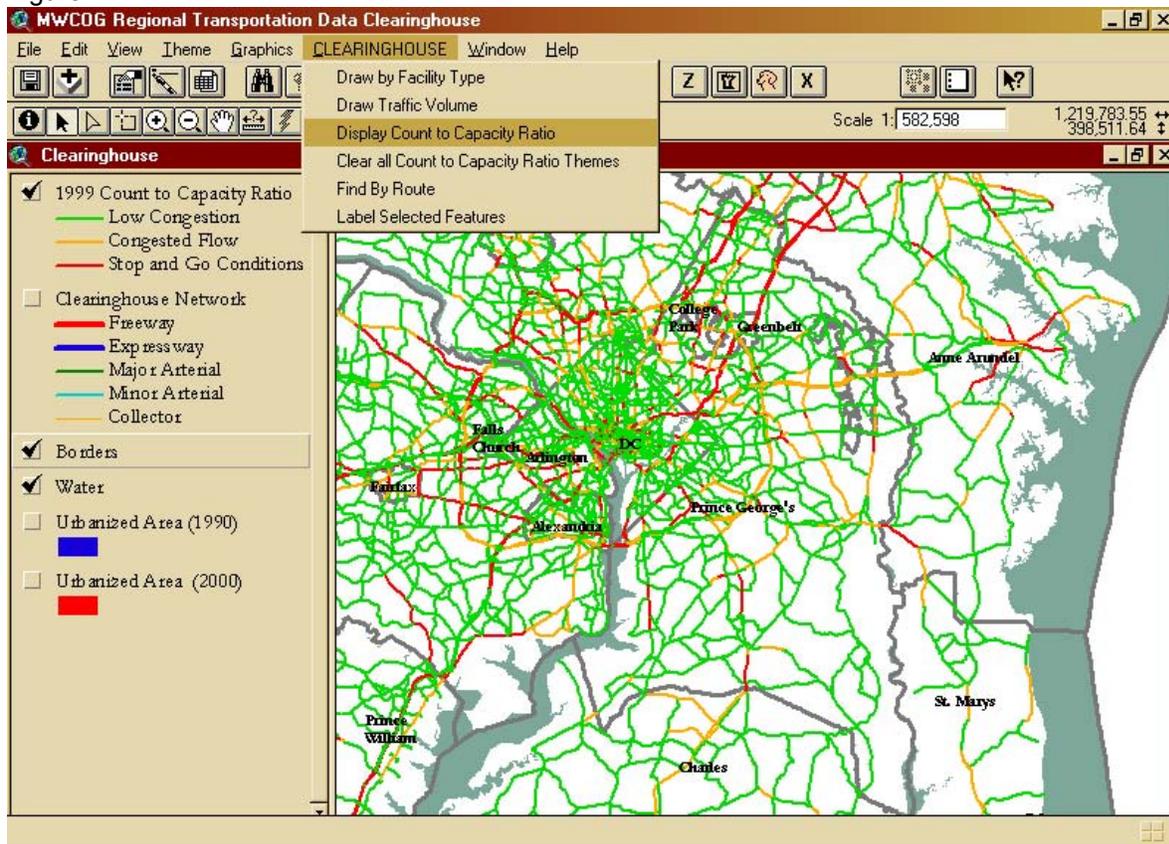
Clearinghouse Components

The Clearinghouse project contains four views—the default Clearinghouse view as well as the Regional Trends, Survey, and Transit views. Each view shows different types of data contained in the Clearinghouse project. Each view has its own pull-down menu. The menu items allow users to easily access many of the datasets contained in the project. Other project-wide buttons provide users with one-click common functionality, such as changing views, zooming to extent, and zooming to the extent of the selected jurisdiction. Each view is described in greater detail below.

Clearinghouse View

The Clearinghouse view is the default view of the project. Users can choose to display network data in a variety of ways. Figure 2 shows the count to capacity ratio for a 1999 year network. Although traffic count data exists for years 1986-2000, only network links for years 1994-2000 are available, as 1994 is the original base year for the Masternet. So, for example, 1988 traffic counts would display upon a 1994 network, while 1998 counts would display upon a 1998 transportation network.

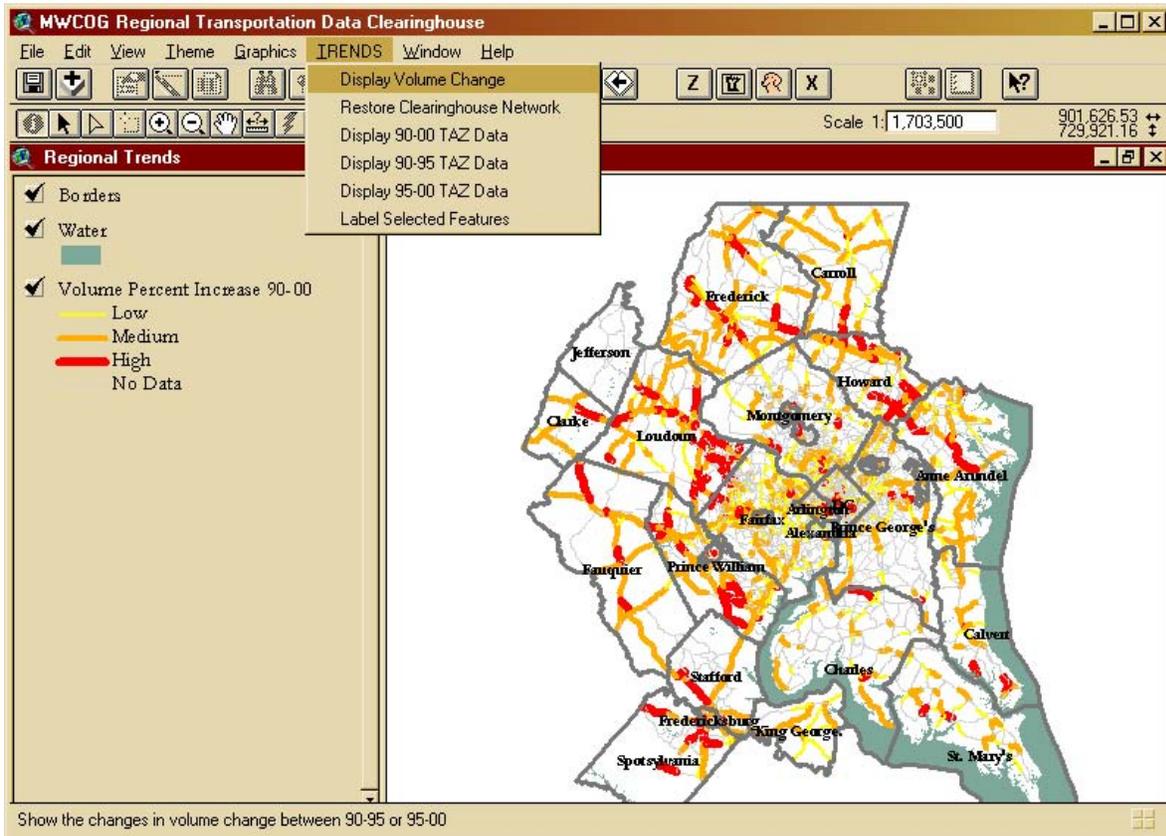
Figure 2



Regional Trends View

The Regional Trends view contains datasets related to transportation and land use. Figure 3 shows an example of the percentage of volume change in traffic for the Washington metropolitan region between 1990 and 2000. Other data include employment, household and population data by transportation analysis zone, or TAZ.

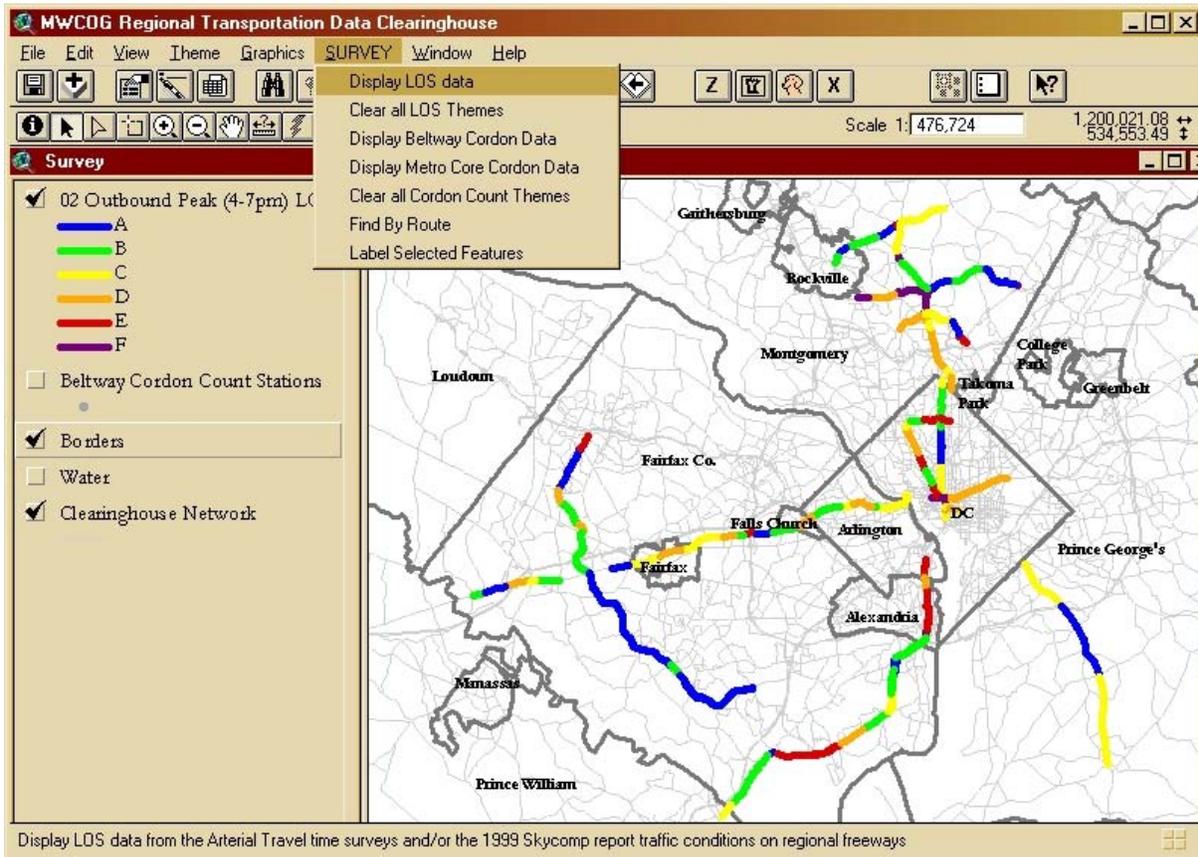
Figure 3



Survey View

The Survey view contains available data pertaining to MWCOG's traffic monitoring and traffic survey programs. Users can display level of service (LOS) data for MWCOG-surveyed arterial streets for years 1999, 2001 and 2002, as well as freeway LOS data for 1999. Figure 4 shows arterial LOS data for 2002. The view also contains traffic counts for the Beltway and Metro Core cordons for years 1995, 1998, and 2001 (Beltway) and 1993, 1996 and 1999 (Metro Core). For ease of use by the casual GIS user, the data can be accessed through the view's pull-down 'Survey' menu. The Beltway and Metro Core menu options contain several pre-defined display choices- showing data by number of vehicle trips (total, SOV, or high occupancy vehicle, or HOV) or number of person trips (total, automobile, HOV, transit). More advanced Arcview users can query, analyze, and display additional data by utilizing any of the several tables contained in the project.

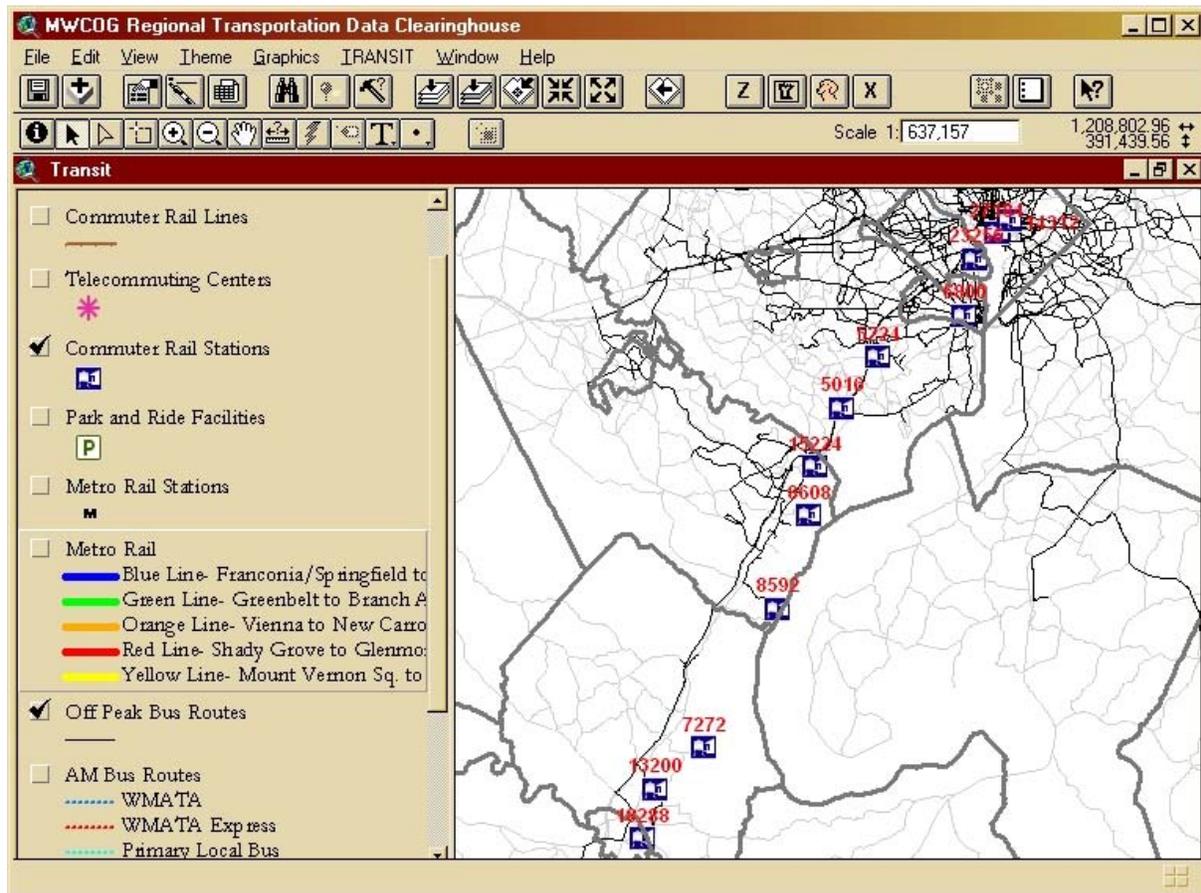
Figure 4



Transit View

As its name implies, the transit view contains all types of transit and related datasets. The current Clearinghouse project includes bus, rail (commuter and Metro), park and ride, and telecommuting center datasets. Data in the Transit view come from a variety of sources, although most datasets are derived directly from the master transportation network. Link and/or node number attributes connect the shapefiles in the Clearinghouse project to the Masternet. The bus route files were directly derived from the Masternet using an automated route building procedure. Figure 5 shows an example of some of the data available in the Transit view, in this case, monthly passenger boarding statistics for a regional rail carrier.

Figure 5



The Future

Currently, development on the MWCOG Regional Transportation Data Clearinghouse continues, although no future release date has yet been set. While the data in the Regional Transportation Data Clearinghouse is primarily based on data collected by COG staff, it is intended to include any type of regional data that can be distributed and may be of use to COG's member jurisdictions. Member jurisdictions are also encouraged to submit their own data for inclusion in the next version of the Clearinghouse project. Current datasets in the project—such as traffic volumes and cordon counts—will be updated as new data becomes available. Additionally, the new regional bicycle facility dataset, currently being created, will be included in the next version. The Clearinghouse project does provide users with a large sample of regional transportation data, but it is by no means a complete set. Thus, users are encouraged to expand the project to suit their needs. Some jurisdictions have done just that, incorporating Clearinghouse data into local projects. Other jurisdictions and affiliated agencies have submitted data to MWCOG for inclusion in the Clearinghouse, as Virginia Railway Express (VRE) has done by submitting ridership figures for inclusion in the project.

Currently, the Clearinghouse project is distributed, in CD-ROM format, to member jurisdictions and other affiliated agencies through the MWCOG Transportation Planning

Board (TPB) Technical Committee. The medium for delivery of the Clearinghouse may change in future releases, however, as MWCOG (and many of its member jurisdictions) begin to more fully incorporate the ArcGIS, ArcIMS, and newer GIS software packages. Whatever the format, the original stated goal for the Clearinghouse will remain-- to develop a comprehensive transportation database powerful enough to be of use to GIS professionals while retaining an ease of use for casual 'non-GIS' GIS users.

Acknowledgement

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