



# Gathering and Analyzing Data







The **Baltimore Metropolitan Council (BMC)** provides technical staff to assist the Baltimore Regional Transportation Board (BRTB) and its advisory committees. One of the important functions that BMC staff provide is gathering and analyzing data to support regional planning efforts and decision making. Areas in which BMC staff provide data gathering and analysis services include:

- Gathering and analyzing regional data and trends
- Monitoring traffic conditions and analyzing traffic congestion
- Forecasting population and employment growth
- Monitoring residential and commercial development
- Producing maps and conducting spatial analyses (GIS services)



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## Gathering and Analyzing Regional Data and Trends

BMC staff work to identify regional travel trends and related policy issues, using existing BMC datasets and outside resources. This includes reviewing, analyzing, and developing transportation planning products from data released by the U.S. Census Bureau. Some specific activities include:

### REGIONAL INDICATORS

BMC staff identify and monitor the broad social and economic forces that influence, and are influenced by, the policies and programs of the BRTB. This involves collecting and analyzing data on transportation system safety and security, transportation infrastructure conditions, accessibility and mobility, the environment, land use, economic development, demographics, and housing.

### JURISDICTIONAL DATA BOOKS

Working with local jurisdictions and state agency staff, BMC staff developed a series of standardized annual publications containing transportation and related data for each of the member jurisdictions. Another product of this initiative is a regional compendium to assist in local and regional planning and decision making. The data books are available in print and online.

## **VULNERABLE POPULATION INDEX**

To support public engagement and project planning efforts, BMC staff developed the Vulnerable Population Index (VPI) tool. This tool uses data obtained from the Decennial Census and the American Community Survey (ACS) to determine the regional distribution of each of seven vulnerable populations. These populations are based on the following indicators: poverty, minority (non-Hispanic, non-white), minority (Hispanic), limited English proficiency (LEP), disabled, elderly, and people with no car.

## **HOUSEHOLD TRAVEL SURVEY**

Travel surveys gather information on the travel habits of people. This information is an important input to various travel simulation tools. BMC staff worked with the Maryland Department of Transportation (MDOT) to expand the BMC Household Travel Survey effort into a statewide survey known as the Maryland Travel Survey (MTS). Concurrently, the Metropolitan Washington Council of Governments (MWCOC) conducted its Regional Travel Survey. The products of these surveys provide a uniform dataset for the state of Maryland.

## **TRAVEL SIMULATION TOOLS**

Travel simulation tools and methods support regional analysis, identify travel trends, enhance exploratory scenario applications, and forecast corridor travel demand for project planning. BMC staff traditionally used an aggregate model (Trip Based Model (TBM)) to predict the potential effects of major programs and projects on the transportation network. Staff is moving toward adopting a disaggregate model (InSITE/C20 Freight/DTALite) to improve the region's ability to simulate travel demand.



## Monitoring Traffic Conditions and Analyzing Traffic Congestion



## ESSENTIAL PARTS OF THE CONGESTION MANAGEMENT PROCESS

Federal law requires all metropolitan areas with populations greater than 200,000 to have a Congestion Management Process (CMP). The CMP consists of strategies and actions to reduce traffic congestion and increase mobility. These include:

- Identifying congested locations
- Determining the causes of congestion
- Evaluating the congestion mitigation potential of different strategies
- Evaluating the effects of previously implemented strategies

To support the CMP, BMC staff collect data to monitor the mobility-related performance of the regional transportation system. Activities include conducting traffic counts, collecting speed and travel time data, and conducting surveys to determine trip generation patterns. BMC staff use this data to analyze system performance relative to federal performance measures and regional targets, and to inform future investment decisions.

Over the last several years, staff has been able to significantly expand their data collection activities with respect to traffic congestion. This is due primarily to the availability of travel data through the I-95 Corridor Coalition Probe Data Analytics (PDA) Suite. BMC staff have been active on the I-95 Corridor Coalition's PDA User Group, further enhancing the effectiveness of the PDA Suite's visualization and analysis tools in monitoring conditions. Staff also use the data generated by the PDA Suite to assess the effectiveness of CMP strategies and to suggest areas where additional investment might be warranted.



# How Might People's Choices about Where to Live and Work Affect the Region's Transportation System?

## FORECASTING POPULATION AND EMPLOYMENT GROWTH

Determining where and how population and jobs are likely to grow helps the region to understand and plan for where and how people are likely to travel within and through the region.

BMC staff work with the Cooperative Forecasting Group (CFG) to develop and maintain population, household, and employment forecasts for the Baltimore metropolitan region. The CFG is one of the BRTB's advisory groups. This group, consisting of planning staff from the local jurisdictions, coordinates the development of jurisdictions' estimates and forecasts. The CFG utilizes local comprehensive plans, adopted zoning maps and regulations, and an inventory of available residential holding capacity to inform the forecasting process.

The forecasts developed by the CFG provide the spatial location and concentration of population, households, and employment. These forecasts serve as key inputs to the regional travel demand model. Planners use this model to simulate individuals' work and non-work travel patterns. Output from the travel demand model helps to identify regional transportation needs. This informs the decisions the BRTB makes about potential new projects in developing the long-range transportation plan and the short-range Transportation Improvement Program.



## MONITORING RESIDENTIAL AND COMMERCIAL DEVELOPMENT ACTIVITY

Similar to population and employment forecasting, monitoring of development activity is important to the transportation planning process. Tracking where people and businesses are moving and investing across the region helps planners analyze the associated demands on the transportation system. This also enables planners and decision makers to see new land development patterns in the region by type (residential, non-residential, mixed-use, etc.), location, and timing. As part of this monitoring process, BMC staff maintain continual contact with state and local agencies to get the data needed for these efforts.

BMC's Building Permit Data System (BPDS) is the source of various products and services. These include reports and analyses of regional trends (supported by maps and charts highlighting notable development activity), as well as a comparison with national trends during the reporting period. Another resource is BPDS Online, which allows users to develop their own queries and search the building permit files online through subscription. In addition, staff continue to make the BPDS Quick Viewer, a free online mapping product that allows users to view the location of selected building permits on a map, publically available.



## Using Maps and Spatial Analysis to Inform Planning Activities

### GEOGRAPHIC INFORMATION SYSTEM SERVICES

BMC staff maintain the Geographic Information System (GIS) that enables information and data to be mapped, analyzed, and disseminated. This includes the graphic depiction of demographic, socioeconomic, and travel information. These services enable planners and decision makers to see patterns and trends across the region. Recent GIS activities include mapping Limited English Proficiency populations in the region and using spatial data to analyze potential effects of transportation investments on Environmental Justice populations.

BMC staff also coordinate and assist with various GIS technical and outreach activities in conjunction with the Baltimore Region Geographic Information Systems Committee (BRGISC) and other BMC initiatives. The BRGISC provides a forum for communication among jurisdictions on national, state, and local GIS applications and resources. Examples of recent BRGISC initiatives include collaborating on GIS data and system changes in preparation for Next Generation 911 (emergency data sharing protocol), collaborating on creating a regional bike trail data set, and Census 2020 boundary delineation.



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