

Other Population Searches Defined in MARPLOT

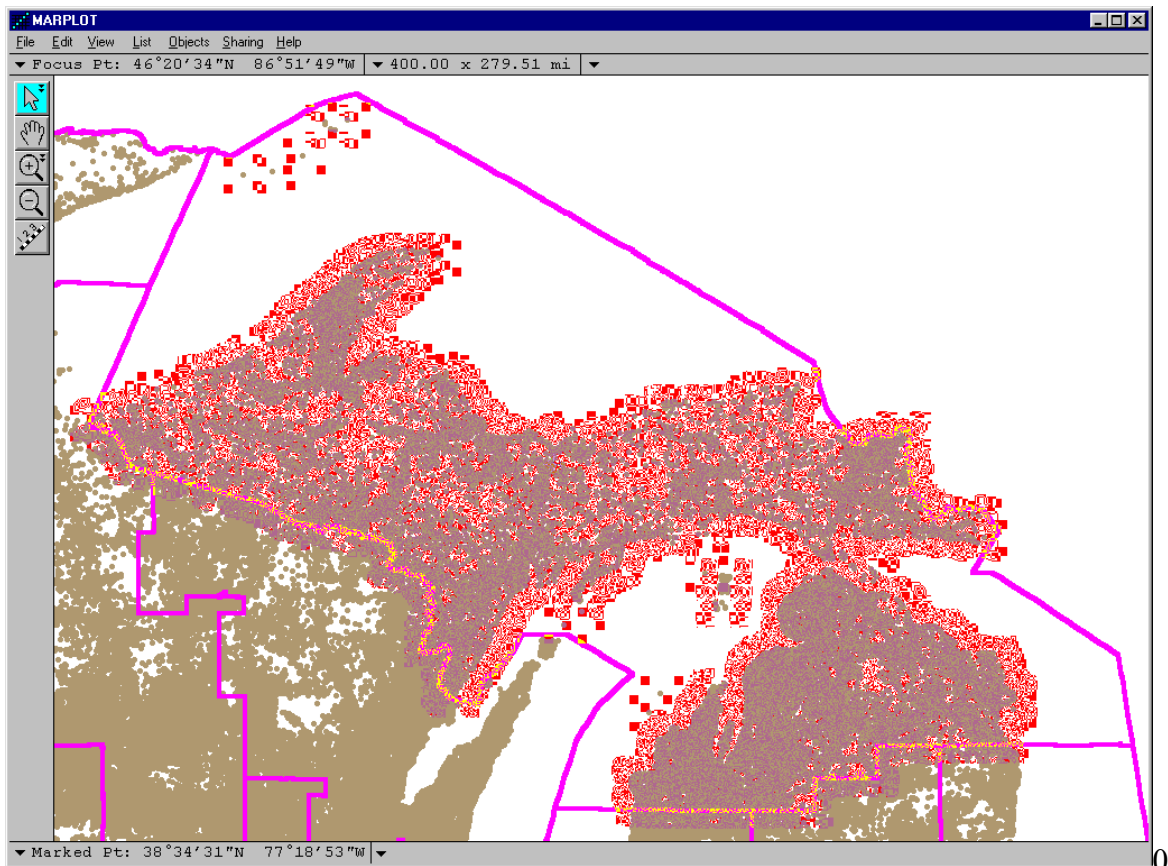
LandView 6 provides two search methodologies for populations around a point—using Census Block points, the most exact population count, and using Census Block Group polygons, for richer demographics. However, there are other population search concerns, and these can be addressed by identifying the area of concern in MARPLOT and using MARPLOT/LandView Sharing functionality to create a population profile. Some examples . . .

Census Block Points within a Defined Polygon

As published, most polygon objects in MARPLOT are already linked to defined population profiles in LandView, but there are exceptions. For example, MARPLOT includes boundary files for both the 106th and the 108th Congressional Districts. Only the 108th Congressional District boundary files—those currently in place and prevailing until after the 2010 Decennial Census—are linked to LandView population data. If we wished to compare the present population of, say, the 1st Congressional District in Michigan with its boundary population as it existed at the time of the 2000 Decennial Census, we would initiate our search in MARPLOT.

In **List/Search . . .**, the search would be for, “Names that start with MI-01 on the Individual Layer, Congressional Districts (106th), on Maps in View”. With this object highlighted in the Search Collection, use **Show on Map and Zoom**.

With the object in **Select** mode on the map screen, a second search can be initiated. This time the search definition is as follows, “Objects that are inside of or touched by the currently selected object on the Individual Layer, Census Block Points, on Maps in View”. With the search completed, use **Show All on Map**. The Search Collection is transferred to the map screen in Select mode, as shown below.



Use **Sharing/LandView/Get Info . . .** The record for each identified block point is **Found** in LandView. The first record is shown. A **Summarize** button summarizes the data for each data field. The Summarized data is as shown below.

Census Data for Year 2000 - Summary of 28589 Census Block Records									
population	housing units	white	black	indian	asian	pacific	other	multi_race	hispanic
639,161	359,404	600,770	6,775	17,056	2,659	173	1,931	9,797	6,478

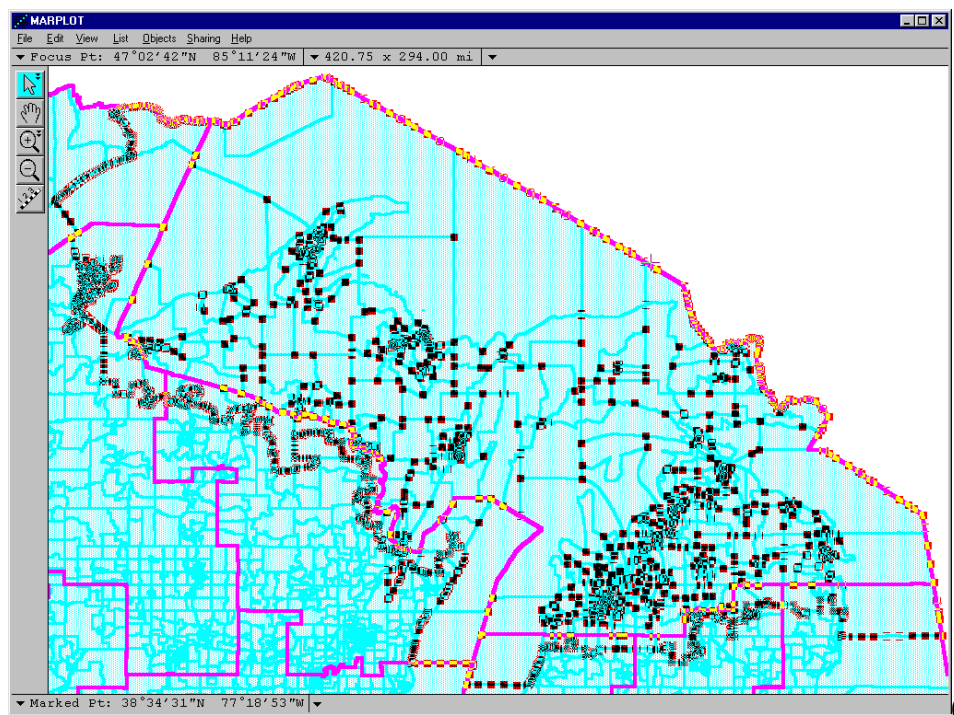
Demographic Data using Census Block Groups within a Defined Polygon

We will discuss two approaches to identifying Census Block Groups that define an impacted population. Again we will use the 1st Congressional District of Michigan as our example. In each case, we will be identifying the centroid of area for selected Census Block Groups. In both cases, the principle is the same—for those Census Block Group polygons that lie across the boundary of the defining polygon, if the centroid lies within the defining polygon, it is counted, and if the centroid lies outside the polygon, it is not counted. On the average, plus and minus, the results should closely approximate an averaging of the demographics.

Our first approach requires manual selection . . .

Manual Selection and Deselection of Census Block Groups

After placing MI-01 in Select mode, we mimic the second search above. Our search is for, “Objects that are inside of or touched by the currently selected object on the Individual Layer, Census Block Groups, on Maps in View”. Again **Show All on Map**. The task of deselection will be easier if first we use the **‘Blue-Blue’ Graphic Override** mode in **List/Layer List . . .** to change the display of our two layers of concern. Set the display of Census Block Groups to, say, blue and the fill to a light crosshatch. Set the display of the Congressional Boundaries to another color, say, pink. It will also be necessary to change to **Draw Order** mode and **Move** the Congressional Boundaries to the **Top**. Returning to the map screen, your view should appear as below.



At this point, it would be useful to use the **Plus Magnifying Glass** to drag a map window of

about 100 miles around the Census Block Group at the northwest corner of the Congressional District. As you deselect and/or select, use the **Hand Tool** to move around the periphery to a new area. Holding down the [Shift] key while clicking with the arrow tool allows multiple selection. **Deselect** the first polygon that lies outside the boundary of the defining polygon. If more than half its area lies outside, leave it unselected. If more than half its area appears to lie inside, reselect it. Move around the boundary until the Census Block Groups approximate the area within the defining polygon. For a polygon such as a Congressional District, planners attempt to match established geography. Only a minor number of Census Block Groups straddle the boundary, and only minor correction is needed.

Repeat **Sharing/LandView/Get Info . . .** LandView identifies related records in the DP-1 table. The first of 579 records is shown, and, again, **Summarize** is used to create the DP-1 profile record, below. Notice that the available profiles extend to the tables, DP-2 through DP-4.

LandView 6 - Census 2000 Profile of General Demographic Characteristics DP-1 (100%)

Summary of Census Block Groups # records summarized: 579

Total population 640,435 Total Housing Units 359,933 Persons per sq. mi: 28.1

SEX AND AGE	Number	PCT	HISPANIC OR LATINO AND RACE	Number	PCT
Male	322,168	50.3	Hispanic or Latino (of any race)	6,481	1.0
Female	318,267	49.7	Mexican *	(0)	(0)
Under 5 years	35,451	5.5	Puerto Rican *	(0)	(0)
Age 5 to 9 years	40,560	6.3	Cuban *	(0)	(0)
Age 10 to 14 years	45,382	7.1	Other Hispanic or Latino *	(0)	(0)
Age 15 to 19 years	47,067	7.3	Not Hispanic or Latino	633,954	99.0
Age 20 to 24 years	37,148	5.8	White alone	598,320	93.4
Age 25 to 34 years	71,889	11.2	RELATIONSHIP		
Age 35 to 44 years	100,050	15.6	In households	614,851	96.0
Age 45 to 54 years	92,802	14.5	Householder	255,797	39.9
Age 55 to 59 years	35,145	5.5	Spouse	141,322	22.1
Age 60 to 64 years	31,360	4.9	Child	174,264	27.2
Age 65 to 74 years	54,159	8.5	Own child under 18 years	140,310	21.9
Age 75 to 84 years	36,472	5.7	Other relatives	14,898	2.3
Age 85 years and over	12,950	2.0	Under 18 years	5,746	0.9
Median age	(0)	(0)	Nonrelatives	28,570	4.5
Age 18 years and over	490,327	76.6	Unmarried partner *	(0)	(0)
Male	245,061	38.3	In group quarters	25,584	4.0
Female	245,266	38.3	Institutionalized population	16,207	2.5
Age 21 years and over	463,382	72.4	Noninstitutionalized population	9,377	1.5
Age 62 years and over	122,049	19.1	HOUSEHOLDS BY TYPE		
Age 65 years and over	103,581	16.2	Total households	255,797	100

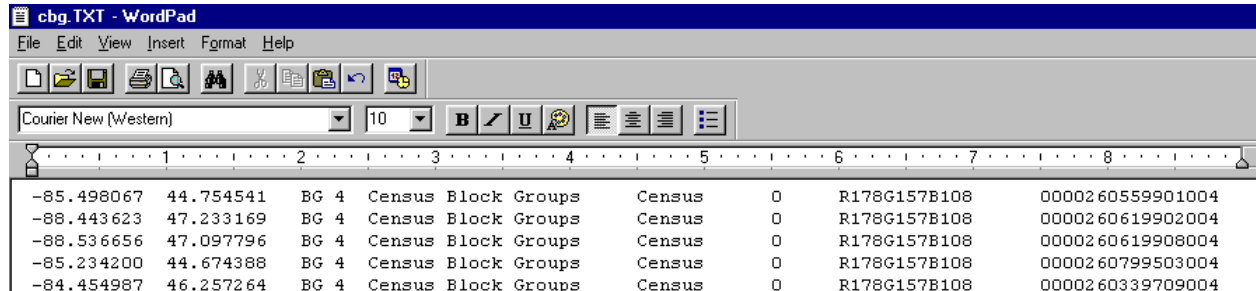
Demographic (DP-1)
 Social (DP-2)
 Economic (DP-3)
 Housing (DP-4)

We will now repeat the above process, but we will let the computer identify those block groups inside and outside of the search area.

Computerized Selection and Deselection of the Census Block Groups

In MARPLOT, Census Block Groups are displayed as polygons, and these polygons are linked to LandView records. We can create a new layer that displays the centroids of these polygons. These centroids will not be linked to LandView data. To do this, we need to use MARPLOT's **Import** and **Export** functionality. We can do this for all Census Block Groups (a very time consuming) or we can do it only for the Search Collection identified above. We will use the latter approach.

Repeat the above Search for Census Block Groups inside of or touched by the polygon. Access **File/Export . . .** There are two available Export formats—a **MARPLOT Import/Export (MIE)** format¹ and a **Simple Point** format, which we will use. We can use the **Search Collection** option, and we can identify where we would like to temporarily store this file. We need to modify the file, and the text editor employed should not change its text characteristics. WordPad is suggested. The first lines of text are as shown below:



The first two columns identify the longitude and latitude of the centroid point. The third column identifies an object name; the fourth—its layer name, and the fifth—its map name. We need to change the layer name, and we will do this with a global **Replace**. Use **Edit/Replace . . .** to replace “Census Block Groups” with “CBG Points”. **Replace All. Save and Close.**

In MARPLOT, import the modified file. A new, searchable layer is created on the Census map. If we examine the layer in **List/Layer List . . .**, we would see that the layer contains 660 objects. Again place the 1st Congressional District in Select mode. Use it to search for, “Objects that are inside of or touched by the currently selected object on the CBG Points layer on Maps in View”. The Search Collection shows 602 objects—Census Block Group centroids—inside the Congressional District. With **Show All on Map**, these are placed in Select mode and become new objects to define our next search, “Objects that are inside of or touching the currently selected objects on the “Census Block Group” layer on Maps in View”.

Completing the Search, we find that only 539 Census Block Group objects have been captured!! A supposedly more exact methodology has given us an inferior result! Why? A close examination of Census Block Groups will show that they are very oddly shaped polygons. Many bear a close resemblance to a ‘quarter moon’ shape. If so, its centroid of area will fall outside of the polygon. An adjacent polygon will contain two centroids while the generating polygon contains none. Polygons that should be counted are not counted.

The Census Bureau when publishing point data is mindful of this and will manually reposition centroid points so that it lies inside of the generating polygon. As you can see, in this instance, such a task can be extremely tedious.

In general, the first methodology suggested, although seemingly less exact, will provide a more exact result.

¹ The MIE format provides all information necessary to recreate the complete map object, including polyline and polygon boundary files. The Simple Point format provides only enough information to recreate the object as a single point—its centroid. For example, in some views, we would like to see the boundaries of the City of Chicago. In others, our concern would be the relative location of Chicago and New York as point objects.

Other Polygon Objects

The **USGS – Federal Lands** layers in MARPLOT come without associated LandView data. Population data associated with these sites could be of interest to users.

A [Unique Solutions](#) article on identifying coastlines demonstrates searching for populations that are within a specified distance from a polyline object. A new polygon object is created that is an envelope or buffer zone around the polyline. An example of this might be determining populations within a half mile of a section of freeway, if noise pollution were a concern.

The ALOHA program, part of the CAMEO Suite of emergency planning and response programs, will generate a polygon representing the toxic zone downstream of a toxic gas release. The population residing in this zone is a concern to emergency managers needing to plan evacuation scenarios.