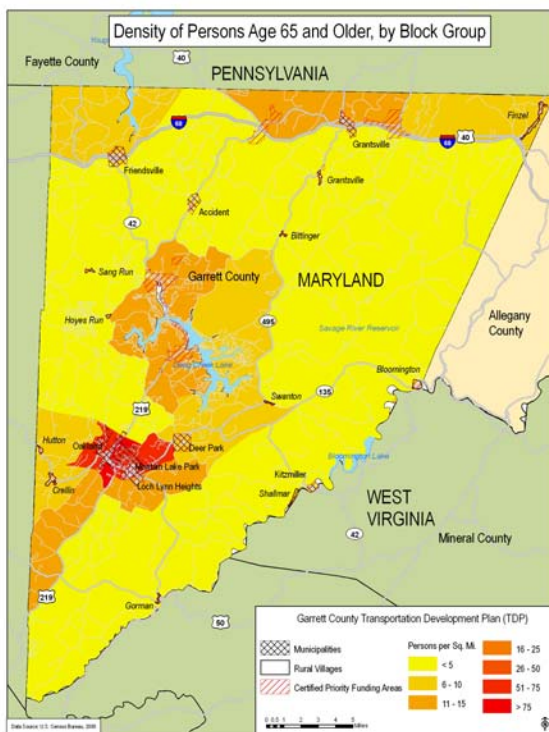


Appendix I

Census Data Primer

Because the coordinated planning process focuses on federal grant programs (Sections 5310, 5316, and 5317) that serve older adults, persons with disabilities, and low income individuals, data collection efforts should focus on data that can help evaluate the numbers, location, density, or dispersion of those target populations. The web site of the United States Census Bureau provides easy access to a wealth of information, including all of the data needed to conduct your analysis.

Data from the Census Bureau web site is provided in numerous formats, including tables, maps, and delimited files (for use in spreadsheet software such as Microsoft Excel). For some users, maps and tables prepared by the Census Bureau and displayed onscreen may be sufficient for analysis; a small county with few census tracts, for example. However, the information provided by the Census Bureau is most useful if mapped with a geographic information system (GIS), such as ArcGIS. GIS is a geographic database that can be viewed, analyzed, and modified in database, map, or model format. Using cartographic boundary files, GIS allows users to input demographic data for a specific geographic area, and then display that data in map format, such as the map shown below.



Suggested steps for using Census data to conduct a demographic analysis are outlined below.

- **Step 1: Determine the *boundary* of analysis, generally the same area covered by the coordinated plan**
- **Step 2: Determine the *level of geography* of analysis, usually Census block, block group, or tract**

The first steps in your analysis are to determine what *level of geography* you are going to analyze and what the *boundary* of that analysis is going to be. *Level of geography* usually refers to cartographic boundaries developed by

the Census Bureau such as Census block, block group, tract, county subdivision, county, and so forth. Census blocks are the smallest geographic unit, followed by block groups, tracts, and then counties, states, divisions, regions, and nations. Notice that other terms you may have heard such as "county subdivisions," or "traffic analysis zones," were not included in the previous list. This is because while blocks, block groups, and tracts all align with county boundaries, that may not always be the case with other geographies. A single tract, for example, may be split between two county subdivisions.

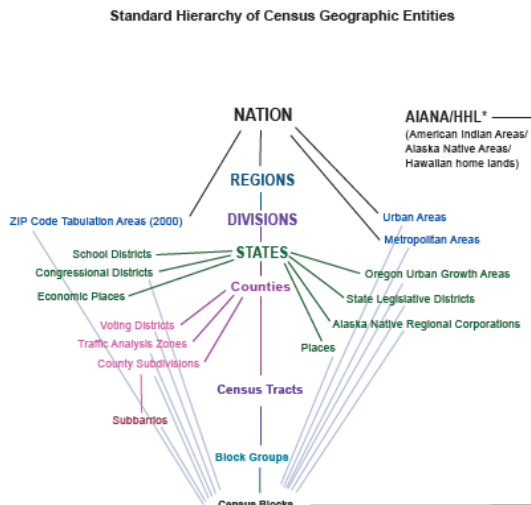
Because Census block group and tract are the most often used *level of geography* with this kind of analysis, a brief description of each, derived from descriptions provided by the Census Bureau, is provided below.

- Census block groups:
 - Generally contain between 600 and 3,000 people, with optimum size of 1,500
 - Boundaries defined by local planning organizations or offices in most cases
 - Never cross state, county, or equivalent area boundaries, except for in the case of a American Indian tribal area

- Census tracts:
 - Generally contain between 1,500 and 8,000 people, with optimum size of 4,000
 - Boundaries defined by local planning organizations or offices in most cases
 - Size varies widely depending on density of settlement area

For a complete list of Census geography, please see: <http://www.census.gov/geo/www/cob/metadata.html>

Additionally, the Census Bureau provides the public with a diagram that can be helpful in this regard:



In most cases, the *boundary* of your analysis will be the area covered by your coordinated plan. For example, if your coordinated plan covers a three county area, then the *boundary* of your analysis would be those three counties. If your "local region," refers to one county, then the *boundary* of your analysis would be that county. The *level of geography* is usually a geographic unit smaller than a county (and your boundary), such as a Census block, block group, tract, or county subdivision. For example, if your *level of geography* is Census block groups, and your *boundary* is a county, then your analysis would be conducted on all of the Census block groups within that designated county.

* Refer to the "Hierarchy of American Indian, Alaska Native, and Hawaiian Entities" on page 2.

Some things to keep in mind when determining your *level of geography*:

- Census blocks: There are two major issues associated with using Census blocks as your *level of geography*. The first is that some of the data used in your analysis may not be provided down to the Census block level. Indicators of disability status, for example, are not tabulated by the Census Bureau at the Census block level. Unless you have access to some other data source (such as a Metropolitan Planning Organization or regional planning agency), you may not be able to obtain the data necessary for your analysis.

Similarly, if you plan to use GIS to display your data, you will need to locate a source for your cartographic boundary file, other than the Census Bureau. While the Census Bureau does provide boundary files for almost all Census geographies, it does not go down to the Census block level. In most cases, the sources for boundary files at the block level are limited to your Regional Planning Commission (RPC), MPO, municipal GIS office, or state GIS office. The Massachusetts Office of Geographic and Environmental Information has compiled an extensive list of state GIS offices.

That list can be found at: <http://www.mass.gov/mgis/giswww.htm>

- Community Characteristics: Consider the physical size of your *level of geography* and keep that in mind when preparing your analysis, especially when determining density. A very small Census block, with a very small population, can appear highly dense if the calculation of persons divided by square miles is taken at face value.

In addition, consider whether your community has generally recognized and referred to geographic boundaries and whether those boundaries align with any Census developed geographies. Counties in Maryland, for example, use locally developed "Regional Planning Districts" for many analytical and county reporting purposes. Those Regional Planning Districts align with Census tract boundaries, allowing local residents to better understand demographic analysis. The element of public recognition is essential to community buy-in of the coordinated plan.

- How will you perform your analysis? If using a table, it may not make sense to go down to the Census block level, as that unit means little to the public when not displayed on a map, overlaid with city or town boundaries. Additionally, if you are not using GIS, obtaining and calculating area data (later used to calculate density of target populations) becomes extremely time-consuming below the Census tract level.

→ **Step 3: Identify your data needs**

The next step is to identify your data needs. Because your analysis is being conducted as part of the coordinated planning process under SAFETEA-LU, the data you'll most likely be looking for will be related to age, income, and disability status. A list of that data is as follows:

- Total population
- Total households
- Total occupied housing units

- Senior population (Usually, the total population age 65 and older)
- Low income households (Generally, total households with annual income less than \$25,000)
- Disability status of the civilian, noninstitutionalized population (in most cases, excluding those persons under age 5)
- Total zero-vehicle housing units (which can be an indicator of income)

All of this data is available on the Census Bureau web site.

→ **Step 4: Obtain data**

Next, download the data you have decided on. All of the data listed above is available for download from the Fact Finder web page, through the Census Bureau:

http://factfinder.census.gov/servlet/DownloadDatasetServlet?_lang=en

Data relating to total population, age, and households are available through Summary File 1, down to the Census block level; data on household income, disability status, and vehicle ownership are available through Summary File 3, down to the block group level. The link above will take you directly to the Download Center, within Fact Finder. From there, take the following steps:

1. Click on "Census 2000 Summary File 1 (SF 1) 100-Percent Data"
2. Select a geographic summary level (*level of geography*), by clicking where indicated
3. Select a state, via the drop-down menu
4. Select a county, via the drop-down menu (if applicable)
5. Select a download method - choose "Selected Detailed Tables"
6. Click on "Go"

Next you will be prompted to choose your specific data. If you are following the data list provided above, hold the Ctrl key and select the following detailed tables:

- P1. Total Population
- P12. Sex by Age (Total Population)
- P15. Households

7. Click "Start Download" to begin the data download. The output will be a zipped file, in delimited format.
8. Save the file to your computer
9. Open spreadsheet software, such as Microsoft Excel

10. Open delimited document

11. Save in spreadsheet format with the name of your choice

12. Repeat this process for Summary File 3 data, by choosing "Census 2000 Summary File 3 (SF 3) - Sample Data" during Step 1, directly above. If you are following the data list provided above, hold the Ctrl key and select the following Summary File 3 tables (remember SF3 data is available only down to the block group level):

- P42. Sex by Age by Disability Status by Employment Status for the Civilian Non-Institutionalized Population 5 Years and Older
- P52. Household Income in [Census year]
- H44. Tenure by Vehicles Available

13a. If you are conducting your analysis in GIS, you will also need to download cartographic boundary files from the Census Bureau, which provide the visual (map) component of your data analysis. You can do that at the following web page: http://www.census.gov/geo/www/cob/bdy_files.html

Cartographic boundary files may also be included with your GIS software. One of the benefits of conducting your analysis in GIS is that you will be able to calculate the area of all geographic units, and therefore the density of target populations. Area data is not provided by the Census Bureau as part of your data download.

13b. If you are conducting your analysis without GIS, you must download area data for your level of geography, separately. As previously discussed, downloading area data for any level of geography below a Census tract is extremely time consuming.

Begin by clicking on the following link:

http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuId=datasets_1&_lang=en

- a. Click on "Census 2000 Summary File 1 (SF 1) 100-Percent Data"
- b. Click on "Custom tables"
- c. Select your geographic type (*level of geography*), via the drop down menu
- d. Select your state, via the drop down menu
- e. Select a county, via the drop down menu
- f. Select one or more geographic areas and click "Add"
- g. Click "Next"
- h. Select the table entitled "G001. GEOGRAPHIC IDENTIFIERS"
- i. Click "Go"

- j. Select your data elements by placing a check mark in the box next to the description. The data elements are:
 - i. Area (Land) (square meters)
 - ii. Area (Water) (square meters)
- k. Click "Add"
- l. Click "Next"
- m. Click "Show Result" – Your results will be displayed onscreen, but for analytical purposes, you need to download those results into spreadsheet format
- n. At the top of the page, click "Print/ Download" and choose "Download"
- o. You will be prompted to choose your file format. Microsoft Excel format is the easiest option, although the other options can also be imported into a spreadsheet
- p. Click "Ok"
- q. A zip file will download- Save, unzip, and open in a spreadsheet program such as Microsoft Excel

If your analysis *boundary* includes more than one county, you will need to repeat this process for each county.

→ **Step 5: Perform Analysis**

You are now ready to perform your analysis. If using GIS, add the data spreadsheets you created and the boundary files to an open *mx*d or *map* document. Join the data to the boundary files using the GEO_ID2 field, and perform necessary calculations within the newly joined table. Finally, use the *Symbology* function to display your data analysis.

If you are not using GIS to perform analysis, a spreadsheet program, such as Microsoft Excel, can be helpful in generating a comparative data table. It is probably most useful to show the number, percentage of total population/ households, and density (units per square mile) of each of your target populations.

You now have multiple spreadsheets that must be combined into one for analysis.

14. Open a blank spreadsheet
15. Open the spreadsheet with the area information you downloaded
16. Copy the entire content of the area spreadsheet into the new, blank spreadsheet
17. Close the area spreadsheet
18. Sort the new spreadsheet numerically, based on the column heading "GEO_ID2". GEO_ID2 contains a unique geographic identifier for each unit of geography, assigned by the Census Bureau.

19. Create a new column called "Total Area" and use the Sum formula to total the Area (Land) and Area (Water) columns. Your density calculations will be based on the new column, Total Area.

20. Convert square meters into square miles, by using your Microsoft Excel Conversion Add-In, or by applying a formula.

21. Open each of the data spreadsheets previously downloaded (population, housing, age, etc.) and repeat the sorting process, based on the GEO_ID2 column. You should find that each spreadsheet has the same number of rows. If not, the most likely reason is a discrepancy in the *levels of geography*. Confirm that all of your data downloads are based on the same geographic unit.

22. Copy data columns for each data spreadsheet into the new spreadsheet, combining all data into one, new workbook.

From here, you will be able to perform numerous analyses, easily catered to your needs. For example, to calculate persons per square mile, add a new column and apply a formula dividing the Total Population column (P001001), by the column created, Total Area.

The above processes can be repeated for any unit of geography, even state. In some cases, it can be helpful to provide a comparison between Census tracts and the overall county and state figures, to show how typical or atypical your study area is. State facts can also be quickly obtained through the Census Bureau's home page at:

<http://www.census.gov/>