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Geography of the 2000 Census

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The Census Geographic Data Initiative is a project of the University of Connecticut Center for Geographic Information and Analysis. The UCCGIA was founded in 1997 with support from the Homer Babbidge Library, the Department of Geography, and the College of Liberal Arts and Sciences. The mission of the Center is to advance the use of geographic data and spatial analytic techniques in research, teaching, and service at the University of Connecticut and in the region it serves.

As Director of the Center, I welcome you to the first in a series of four workshops sponsored by the Initiative.

The purpose of the UCCGIA's Census Geographic Data Initiative is threefold:

First, we want to increase understanding and use of U.S. Census **geographic** data in the University community and in the state.

Second, we are in the process of designing and creating a digital geographic database of Connecticut census geography for each decennial census from 1790 to 2000.

Third, we are working with colleagues in the Library's Information Technology section to develop search and discovery tools that will use this database to find information.

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Four Workshops

- Geography of the 2000 Census
- Using the Census Web Site
- Census Geography Items in the Homer Babbidge Collection
- Census Enumeration Districts

Today's workshop focuses on the geography of the 2000 Census. The other workshops this year will cover using the Census web site, census geography items in the Homer Babbidge Collection, and census enumeration districts.
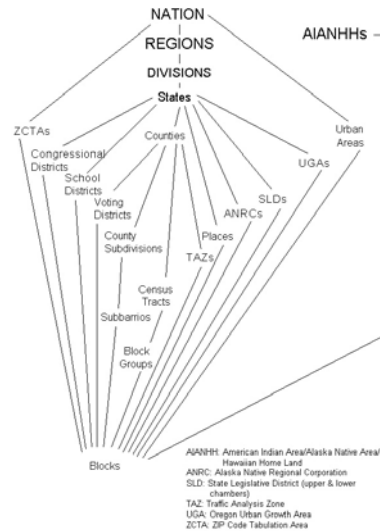
Purpose of this Presentation

- Overview of the geographic units used in the 2000 Census
- Exploration of the hierarchy of spatial units
- Definitions of geographic units
- Examples for Connecticut

The purpose of this presentation is to provide an overview of the geographic units used in the 2000 Census. We will explore the hierarchy of spatial units and look at the definitions of geographic units.

The presentation uses examples from Connecticut..

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Geographic Units

- Used for reporting
- Based on *blocks* as the building blocks
- Organized hierarchically

NATION
REGIONS
DIVISIONS
States
AIANHHs
ZCTAs
Congressional Districts
School Districts
Voting Districts
Counties
Urban Areas
UGAs
SLDs
ANRCs
County Subdivisions
Places
TAZs
Census Tracts
Subbarrios
Block Groups
Blocks

AIANHH: American Indian Area/Alaska Native Area/Hawaiian Home Land
ANRC: Alaska Native Regional Corporation
SLD: State Legislative District (upper & lower chambers)
TAZ: Traffic Analysis Zone
UGA: Oregon Urban Growth Area
ZCTA: ZIP Code Tabulation Area

The U.S. Census uses geographical units to aggregate data for reporting the results of the Census.

This graphic, included in the handout, shows the hierarchy of units used in the latest Census conducted in 2000. The building block of the Census geographic hierarchy is the block.

A spatial hierarchy is an ordered set of regions.

In a spatial hierarchy, a subregion is part of only one region in the next higher order.

The Census hierarchy is shown in the middle of this schematic with blocks nesting in block groups, block groups nesting in tracts, tracts nesting in counties, and so on.

The Census has chosen to use census blocks as the building block for other non-Census units but these do not necessarily nest within the Census hierarchy of block groups and tracts as this figure shows.

Census units have changed over time. The entire country was divided into blocks for the first time for the 1990 Census. The entire country was divided into census tracts for the first time for the 2000 Census.

Definitions of Geographic Units

- Provided in technical documentation
  (usually Appendix A)
- www.census.gov/geo/www/tiger/glossry2.pdf
- Handout Examples
  Block
  Block Group
  Tract
  Place (may cross county lines)
  County Subdivision

   The U.S. Census provides technical documentation defining census geographic units. This glossary can be downloaded from the Census web site. We will be talking about the Census web site in the next workshop in this series.

The handout provides definitions from the glossary for the 2000 Census for blocks, block groups, and tracts, county subdivisions, and places.

[Go over definitions of block, block group, and tract].

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- Numbers of Units in Connecticut

- Tabulation Blocks versus Collection Blocks

| Unit		Count
County		8
Tract		819
Block Group		2,620
Block		53,835

For the 2000 Census, data were tabulated and reported for 8 counties in Connecticut, 819 tracts, 2,620 block groups, and 53,835 blocks. This number of tracts is smaller than the number of tracts in Manhattan, New York.

These units are reporting units. The Census uses different units, enumeration or collection units, to collect census data. We will be discussing enumeration districts in the last of the workshops in this series.
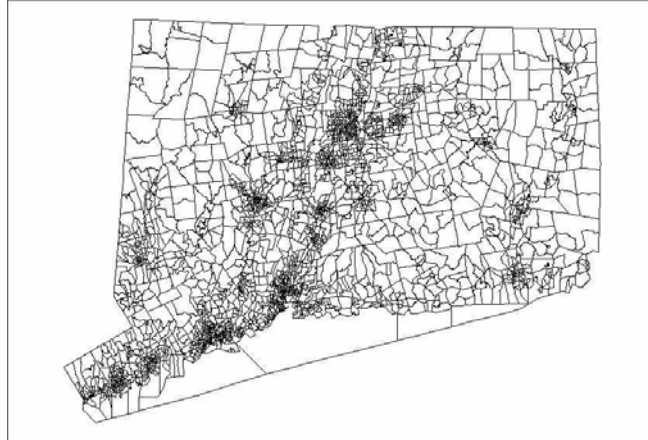
- Connecticut 2000 Blocks
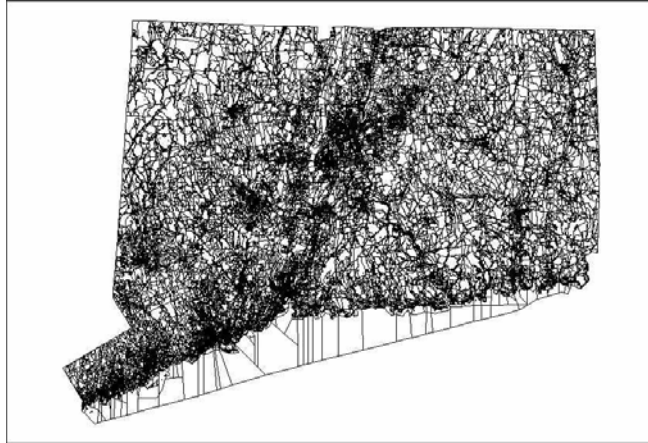
These are the blocks from the 2000 Census. Note that the Census is based on political/administrative unit boundaries, which may or may not coincide with physical features. The units extend into Long Island Sound because the political territory of the state extends into the Sound.

Some blocks may not have any population or housing counts. Because the state is part of the Census hierarchy, the Census needs to be able to represent the state and so the state unit must include territory in Long Island Sound or in the interior even if no population or housing is present.

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- Connecticut 2000 Block Groups

These are the block groups from the 2000 Census.
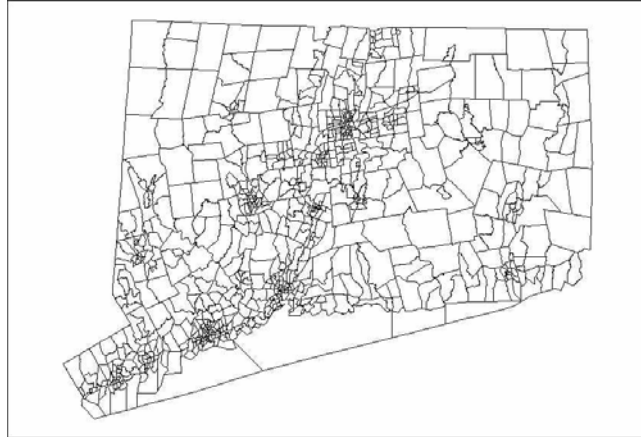
These are the tracts from the 2000 Census for Connecticut.

Because the Census creates units of approximately equal population size, the units vary in terms of geographical area. Tracrts in urban areas are smaller than tracts in rural areas. This difference is even more pronounced in states that are larger than Connecticut.

Importance of Census Geography

- Data tables summarized by geographic summary levels
- Different types of data are reported for different summary levels
- Geographic unit identifier numbers are used to link data tables to geographic boundary files for mapping

There are three main reasons why it is important to understand the geography of the Census: data tables are summarized by geographic summary levels, different types of data are reported for different summary levels, geographic unit identifier numbers are used to link geographic boundaries to data tables for mapping purposes,

The variability in the geographic area of census units may also be an issue for some types of mapping and spatial data analysis. In addition, variability in how census units nest within other geographies like local government boundaries may also be an issue.

Summary Levels and Reporting

- Summary Levels used to aggregate data in tables geographically

- Handout Example

  140 State-County-Census Tract
  080 State-County-County Subdivision-Place/Remainder-Census Tract

The Census collects information at the household level but does not report data for individual households at individual addresses. Instead, the Census aggregates data in tables geographically by summary level. Data can be aggregated and reported for blocks, block groups, tracts, and so on. The rows of the table are geographic units and the columns of the table are census population and housing variables. [See last page of handout for an example of a Population variable].

If the Summary Level is 140, the record contains tract level data for a census tract within a county within a state. Census tracts are uniquely numbered within a county and do not cross county boundaries.

If the Summary Level is 080, however, the record contains data for the portion of the tract that is within a place and the places would be organized into county subdivisions (towns in Connecticut). Tracts not in places would be categorized into the remainder (the non-place part) of the county subdivision.

To interpret a Summary Level, the last geographic area type listed identifies the geography of the record and the prior codes identify the hierarchy used to reach that geography. The key is to work backwards through the hierarchy.

Census Hierarchy and Reporting

- PL 94-171 data—block level
- Summary File 1 data—block level
- Summary File 2 data—tract level
- Summary File 3 data—block group level
- Summary File 4 data—tract level

The Census Bureau reports population and housing data in tables that summarize the data in different ways. The first product released is usually the Census Redistricting (Public Law 94-171) Summary File. The 2000 data include tabulations for the total population and the population 18 years old and over for 63 race categories. Detailed tabulations present data down to the **block** level.

Summary File 1 presents counts and cross-tabulations of information collected from all people and housing units. Data are available down to the **block** level for some tabulations but only to the **census tract** level for others if reporting at the block level might identify a household.

Summary File 2 also presents the 100% count population and housing characteristics but these data are provided for detailed race and ethnic groups. The lowest level of geography is the **census tract**.

Summary File 3 presents the sample data provided only down to the **block group** or **census tract** level.

Summary File 4 data are the analog to summary File 2 and offer sample data for detailed race and ethnic groups to the **census tract** level.

The American Community Survey is replacing the sample long form data used in the 2000 Census. It will collect and report sample data continuously beginning with the 2010 Census.

Geographic Unit Identifiers

- Mix of FIPS and Census codes
- FIPS
  Federal Information Processing Standard
- Census block, block group, tract
  Unique *only* within the next higher unit in the hierarchy

Each unit in the Census hierarchy is identified by a code. These identifiers are a mix of FIPS (Federal Information Processing Standard Codes) and Census designated codes.

These codes may be reported as text or as numbers. Users should be careful to pay attention to the issue of leading zeros. For example, Connecticut is FIPS state 9 which may be reported as 09 in a text field or 9 in a numeric field.

Census block, block group, and tract identifier numbers nationally are unique only within the next higher unit in the hierarchy.

To identify the block where the Homer Babbidge Library is located, the following codes would be used:

09 to identify the state.

013 to identify the county.

881200 to identify the census tract within Tolland County.

Note that tract identifier numbers are generally 4 digits. Some tract identifiers, however, have a suffix like 01 or 02 which can be used when tracts are subdivided. This brings the number of digits that must be used to record all census tract identifiers in a database to 6.
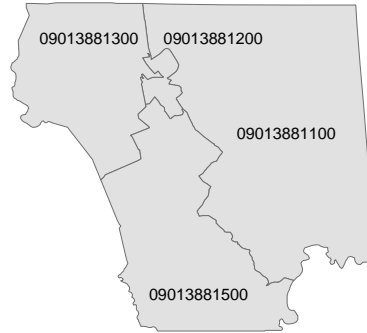
1 to identify the block group within the tract. It is the first digit in the 4-digit block identifier.

017 to identify the Census block within the block group.

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Census Tracts with Group Quarters

- University of Connecticut campus

- Tract ID 09013881200

09013881300   09013881200

09013881100

09013881500

Some tracts are designed to correspond to special populations like those living in group quarters. This might include universities, prisons, military bases, or other facilities.

Here is an example of this approach from the 2000 Census for tracts in the Town of Mansfield. One tract corresponds roughly to the University of Connecticut main campus.
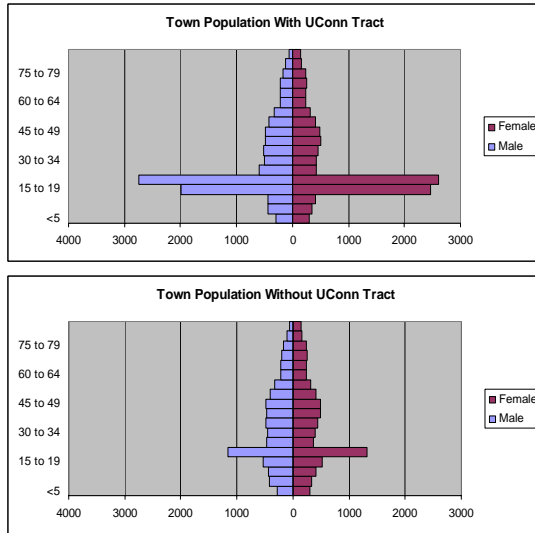
Defining tracts in this way enables users of Census data to make decisions about including or not including these tracts in an analysis of census data. Group quarters populations often have distinctive sociodemographic characteristics. Here, we see the impact of including the UConn tract in the town's population on the age and sex distribution of the population of the town.

Connecticut Towns

- County Subdivision in the Hierarchy
  Minor Civil Divisions
- Built from census blocks
- Nest within counties
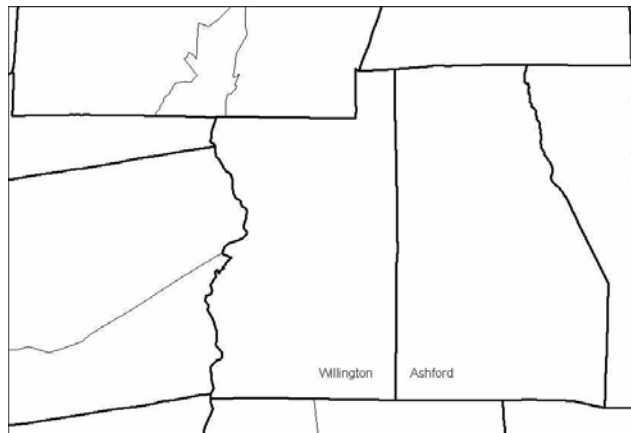- *DO NOT* consistently nest with tracts

Although towns are important political units in Connecticut, they are not part of the central hierarchy of Census units. In the Census hierarchy, towns are county subdivisions, specifically, minor civil divisions. They are built from census blocks and they nest perfectly within counties but they do not consistently nest within tracts.

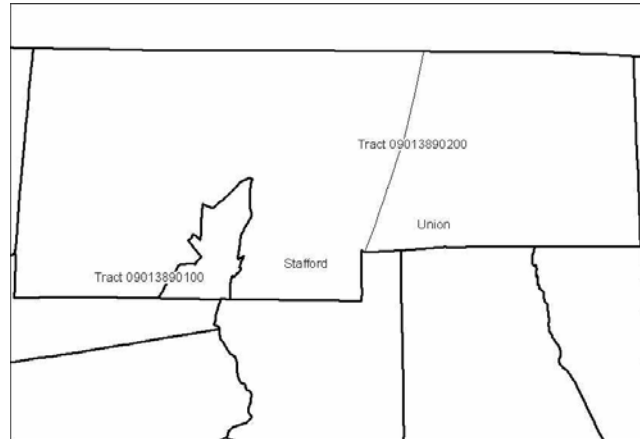Some towns like Hartford and other towns with large populations have multiple census tracts.

Other towns, like Willington and Ashford, are single tract towns.

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• One town is part of a larger tract

Tract 09013890200

Union

Stafford

Tract 09013890100

   In the 2000 Census, the town of Union is included in a larger census tract that also covers part of the town of Stafford. Stafford Springs, within the town of Stafford, has its own census tract.

Places and Urban Areas

- Places
  Five-digit FIPS Codes
- Urban Areas
  Urbanized Areas and Urban Clusters
- Metropolitan Areas (OMB *NOT* Census)

   The main hierarchy of the Census (block, block group, tract) does not coincide with a wide range of units important to the study of urban areas.

Places are cities, towns, villages, and boroughs. These have 5-digit FIPS codes based on the alphabetical order of the place's name within a state. The Census does not use the 1-169 town numbers that many state agencies in Connecticut use to code towns. Towns in New England are treated as county subdivisions (specifically, minor civil divisions), not as incorporated places. Places in New England might include areas like Willimantic in the Town of Windham. Other rules apply in different states.

The Census Bureau classifies population and housing units in urbanized areas and urban clusters as urban. Areas outside these areas are rural.

Metropolitan areas in the United States are defined based on criteria set by the Office of Management and Budget and not by the U.S. Census Bureau.

Geographic components codes can be used to aggregate data for urban, rural, and metropolitan areas. [Look at handout on Summary Levels]

Other Units

- Traffic Analysis Zones (TAZ)
  Census-DOT
- ZIP Code Tabulation Areas (ZCTA)
- School Districts
- Voting Districts

As the Census graphic showing units shows, the Census reports data for other kinds of units.

Traffic Analysis Zones or TAZs are developed through the Census Transportation Planning Program, a joint program with the Department of Transportation. These units are used to report where people work rather than where they live.

ZIP Code Tabulation Areas grew out of a project to report demographic data for zip codes. Zip codes are not strictly areas in the geographical sense. They are a collection of places where mail is delivered on a particular route. Because so many business and organizations have zip code data on customers and clients, the Census made an effort to report demographic data by zip code.

School districts and voting districts are also used to report sociodemographic information.

How to Find Census Geographic Data

- Census Web Site
  www.census.gov

- Second CGDI Workshop
  Using the Census Web Site
  November 7, 2007
  2:00 – 3:00 pm
  Library Level II Lecture Center

Census geographic data can be downloaded from the Census web site and can be acquired from the collections at Babbidge Library.

The second workshop in this series, to be held on November 7, will focus on using the Census Web Site.

The third workshop in this series will focus on Census geographic holdings in the Babbidge collection.

Thank you for your participation in the workshop.