

11.520: A Workshop on Geographic Information Systems

11.188: Urban Planning and Social Science Laboratory

Making Sense of the Census

Introduction to the U.S. Census of Population and Housing

Overview

- What is it and why do we care?
- How the data are collected
- What data are available?
- Introduction to Census geography and summary levels
- A Quick Look at the Census documentation
- A Quick Look at some sample data

What is it and Why Do We Care?

- Mandated by the [Constitution of the United States](#)
- The modern census of population and housing was established in 1940 with the incorporation of the housing component and the introduction of sampling techniques for the long form
- Conducted every ten years
- Attempts an actual count of population categorized by various criteria
- The only source for demographic data with a wide geographic scope
- The most reliable and detailed information for describing local area - neighborhoods, cities, counties
- The most consistent source of time series demographic data available
- Federal dollars for schools, employment services, highway assistance, housing construction, hospital services, programs for the elderly, etc. are all distributed based on census figures. Also, congressional representatives are apportioned based on census counts.

How the Data Are Collected

- Collected from households through a mail survey conducted every decade
- For the 2000 Census more than 285,000 census takers and support personnel have worked to account for the 118 million households and 275 million persons in the United States. [2000 Census](#)
- Two different census questionnaires are distributed:
 - short-form questionnaire contains questions asked of everyone
 - long-form questionnaire contains questions asked of a population sample (1/6 households)

What's Included - Information on Population, Employment and Housing Characteristics

- **Short Form - 100 sample - STF1**

- **Population Characteristics** **Housing Characteristics**

<i>Age</i>	<i>Tenure</i>
<i>Gender</i>	<i>Value or Contract Rent</i>
<i>Race</i>	<i>Vacancy Status</i>
<i>Hispanic Origin</i>	<i>Number of Rooms</i>
<i>Marital Status</i>	<i>Units in Structure</i>
<i>Household Type</i>	<i>Congregate Housing</i>
<i>Household Relationship</i>	

- Sample Short Form from 2000 Census

- **Long Form - STF3**

- **Population**

- *Social Characteristics*

Education, Citizenship, Ancestry, Language, Disability, Children, Place of Birth, etc.

- *Economic Characteristics*

Income, Labor Force Status, Employment, Place of Work, Public Assistance, Retirement Income, etc.

- **Housing**

Age of Housing, Heating Fuel, Facilities, Vehicles, Mortgage Status, etc.

- Sample Long Form from 2000 Census
- **Why We Need to Know the Two Components**
 - Accuracy of the data varies and counts differ (Why?)
 - It helps us to understand how the data are organized in Summary Tape Files (STFs)

Census Geography and Summary Levels

- **The Census organizes and aggregates data into a series of geographic hierarchies**
- Overview**

Summary Level	Geographic Unit
010	United States
020	Region - Northeast (NE), Midwest (MW), South (S) and West (W) Regions
030	Division - NE -New England, Mid Atlantic; MW - East North Central, West North Central; S - South Atlantic, East South Central, West South Central; W - Mountain, Pacific
040	State - includes Washington D.C.
050	County
060	County Subdivision
070	Place
080	Census Tract / Block Numbering Area - average 4,000 persons
090	Block Group - average 1,000 persons
100	Block - average 85 persons

- **State-County-Tract-Block Group Nesting**

Summary Level	Geographic Unit
040	State - includes Washington D.C.
050	County
140	Census Tract
150	Block Group

- Supplemental geographic areas

Summary Level	Geographic Unit
400	Urbanized Areas
300	Metropolitan Areas (MSAs, CMSAs)
200	American Indian and Alaska Native areas
800	ZIP codes

[A Sample of SUMMARY LEVEL information from the STF3 Documentation](#)

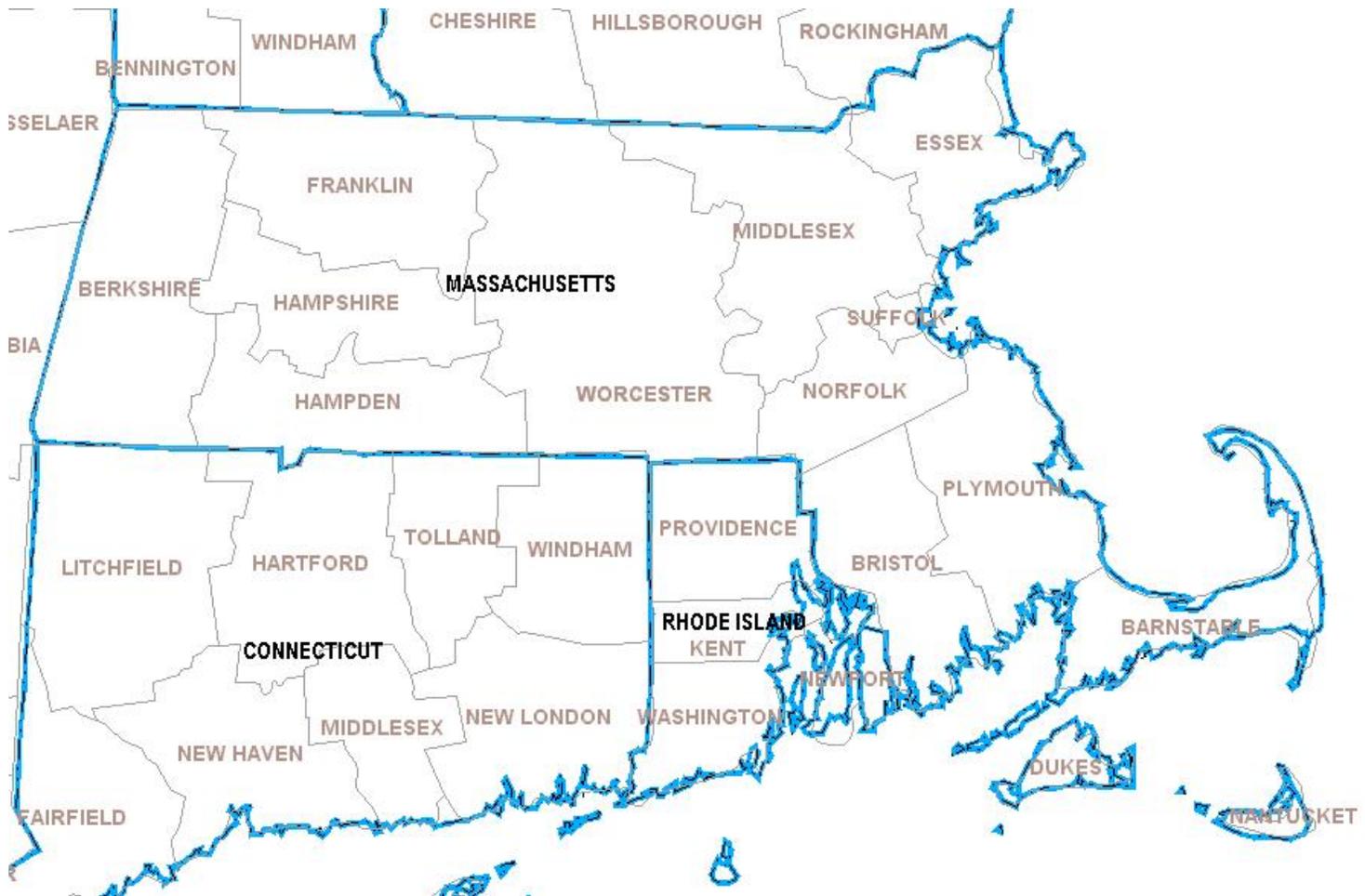
- A Visual Look at Census Geography
 - Continental United States (Regions - blue; Divisions - green; States - brown)



- Counties

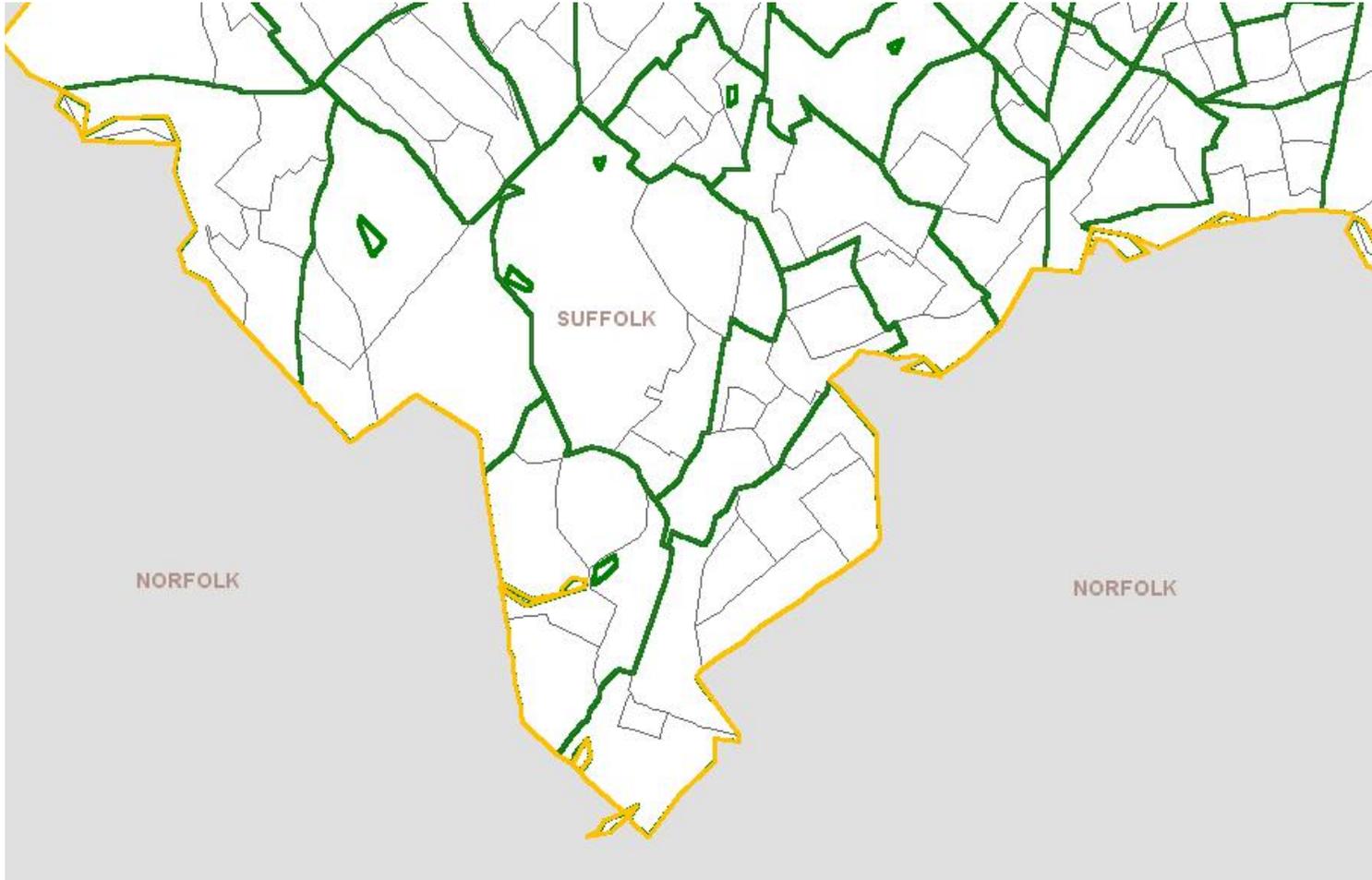


- o **A Closer Look at Southern New England Counties**



- o **Tracts in Suffolk County, MA**

- **Block Groups in Suffolk County, Massachusetts (black lines; tracts in green)**



- **Census Geography Concepts**
 - The census block is the basic level
 - Confidentiality must be maintained, and data about individual persons and households are not revealed
 - More detailed data are provided for higher levels of geography (Why?)
 - Many, but not all, items are available at multiple summary levels
- **Potential Problems**
 - The same geographic name is used for summary levels corresponding to different aggregations
 - Geographic areas at lower levels may be subdivided by higher levels of geographic units - e.g. split census tract
 - The same variable names are used for different variables in the STF1 and [STF 3](#)
 - Variable value encoding makes identifying the meaning of variable difficult
 - ZIP codes do not overlay other units cleanly
 - Geographic boundaries change with time, making time-series analysis difficult

Summary Tape Files Available on CD-ROM (and Possibly Online)

- **STF 1: 100% count data from the short form**
 - [A](#): States and subdivisions to the block group level
 - [B](#): Block level
 - [C](#): Entire U.S. and major subdivisions
 - [D](#): Congressional Districts
- **STF 3: Sample data from the long form**
 - [A](#): States and subdivisions to the block group level
 - [B](#): 5-digit ZIP codes
 - [C](#): Entire U.S. and major subdivisions
 - [D](#): Congressional Districts

A Quick Look at the Census Documentation

- [STF 3A Documentation Table of Contents](#)
- [STF 3A Variable Locator](#)
- [Subject Locator](#)
- [Table Definitions \(Matrix\)](#)
- [Using the File \(List of Census Tables by DBF File\)](#)
- [State/County FIPS Codes](#)
- [Summary Level Sequence Charts](#)
- STF3A CD-ROM for Massachusetts and New Hampshire (revised)
- [1990 Census Lookup](#) (a forms-driven Census information access system)
- [Online Census CD-ROMs at the University of California](#)

[List of CD-ROMs available via NFS](#)

*Warning: Access to these online CD-ROMs is **slow!*** While it is possible to use these files on the MIT server, you will need to use a special form of the **attach** command, '**attach -n -e**'. View the **attach** online manual page (via '**man attach**'). A useful web site for getting a quick look at 1990 Census data is the Census Lookup Site at <http://venus.census.gov/cdrom/lookup>.

More Information About the [2000 Census](#)

[Response Rates for 2000 Census](#)

[Data Release Dates](#)

[Subjects Areas of Questions Asked](#)

The section of these notes entitled "Introduction to the U.S. Census of Population and Housing" is adapted from a Microsoft PowerPoint presentation created by Qing Shen for a lecture he delivered to the MIT class 11.208.