

Applications of GIS and Mapping for New York City Data

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Introduction

- The Center for Urban Research (CUR), headed by Professor John Mollenkopf, is part of the Graduate Center at the CUNY
 - CUNY Data Service
 - CUNY Mapping Service
- Expertise in secondary data analysis and GIS for New York City

Presentation Outline

- Introduction to GIS
 - Locating New York City Geographic Data Files
 - Geo-coding Data
- New York City Data Sources
 - Demographic Survey Data
 - Administrative Data
- Applications of GIS for New York City Data
 - Merging Individual Data with Contextual Data
 - Allocation of Data on the basis of Geography
 - Examples from CUR Projects

What is GIS?

- ❑ “GIS is a collection of computer hardware, software, and geographic data for capturing, managing, analyzing, and displaying all forms of geographically referenced information”

(www.gis.com/whatisgis/index.html)

- ❑ Google Maps and Mapquest are just the beginning
- ❑ Gaining popularity in the social sciences

GIS Programs

- Two major programs in the field
 - MapInfo
 - ESRI's ArcGIS
- Each has unique file format
 - MapInfo uses .tab files
 - ArcGIS uses .shp files
 - Actually, a .shp file could have three or more files



Tracts.shx	18 KB	SHX File
Tracts.shp	1,424 KB	SHP File
Tracts.sbx	2 KB	SBX File
Tracts.sbn	23 KB	SBN File
Tracts.dbf	4,674 KB	DBF File

Types of Geographic Files

□ Point Files

- Show the location of a specific point, usually as an XY coordinate
- Buildings, intersections, crimes

□ Line Files

- Route or road files
- Street maps, subway lines

□ Polygon Files

- Areas bounded with lines
- Parks, neighborhoods, lakes, tracts

Table Format of a Geographic File

- Each point, polygon, or line segment corresponds to a row in a table, shown on the right
- Can have geographic coordinate data
- Can also have descriptive data
- Additional data can be appended

FID	Shape	ID	POINT_X	POINT_Y	STAT	DATE_
0	Point	64738650	987699.502675	199441.538248	CLOSED	4/4/2006
1	Point	64739418	984788.020759	198715.476809	CLOSED	4/18/2006
2	Point	64744927	983350.204997	201290.54813	ACTIVE	4/24/2006
3	Point	64748960	981894.238936	197857.531041	CLOSED	4/17/2006
4	Point	64761399	985914.057743	199615.618943	ACTIVE	4/14/2006
5	Point	64765920	988104.506751	218248.995041	CLOSED	4/4/2006
6	Point	64792165	990536.300871	212260.781504	CLOSED	4/17/2006
7	Point	64800522	986078.287203	216111.420247	CLOSED	4/4/2006
8	Point	64825481	986044.65601	214956.126654	CLOSED	4/20/2006
9	Point	64846607	989334.97732	225210.361355	CLOSED	4/12/2006
10	Point	64863016	993024.464816	230286.899363	ACTIVE	4/24/2006
11	Point	64875727	990426.821537	210972.343076	ACTIVE	4/30/2006
12	Point	64878525	985574.978934	216969.338301	CLOSED	4/18/2006
13	Point	64884863	990040.171259	227278.165211	CLOSED	4/12/2006

Shape'	STATEFP	BORO	CT2000	BCT2000	POP	HU	HISPANIC	IHW	IHB	IHA
Polygon	36	4	000200	4000200	2941	949	1202	831	103	611
Polygon	36	4	000400	4000400	4747	1481	2689	695	263	674
Polygon	36	4	000600	4000600	3717	1168	1846	765	276	466
Polygon	36	4	000800	4000800	3186	1014	1518	974	117	380
Polygon	36	4	001000	4001000	3170	1018	1409	910	105	545
Polygon	36	4	001200	4001200	3797	1304	1475	1467	68	530
Polygon	36	4	001400	4001400	3268	1225	1221	1431	72	371
Polygon	36	4	001600	4001600	2688	815	1233	889	108	293
Polygon	36	4	001800	4001800	2795	922	1343	891	59	300
Polygon	36	4	001900	4001900	794	379	368	300	25	75
Polygon	36	4	002000	4002000	1332	394	535	419	64	213
Polygon	36	4	002200	4002200	2409	910	1014	786	130	349
Polygon	36	4	002400	4002400	2163	706	972	549	204	253
Polygon	36	4	002500	4002500	6597	2570	2053	162	3995	146

Downloading Geographic Files

- ❑ *Bytes of the Big Apple*, NYC Department of City Planning
(www.nyc.gov/planning/html/bytes/applbyte.shtml)
- ❑ *NYCMAP*, NYC Department of Information Technology and Telecommunications
(www.nyc.gov/html/doitt/html/eservices/eservices_gis.shtml)
- ❑ NYS GIS Clearinghouse
(www.nysgis.state.ny.us)
- ❑ U.S. Bureau of the Census
(www.census.gov/geo/www/cob/index.html)

Bytes of the Big Apple

- Administrative and Political Boundary Files
- Census Geography Boundary Files
- Public and Private Community Facility Location database
- LION (NYC Street Map)
- Tax Block and Lot Data
 - Tax Block and Lot Boundaries
 - PLUTO
 - PAD

Bytes of the Big Apple Website 1

The screenshot shows a web browser window displaying the NYC Department of City Planning website. The address bar shows the URL: <http://www.nyc.gov/html/dcp/html/bytes/applbyte.shtml>. The browser's search bar contains "GIS for Social Science". The website header includes the NYC logo and the text "NEW YORK CITY DEPARTMENT OF CITY PLANNING". A navigation menu at the top lists "Residents", "Business", "Visitors", "Government", "Office of the Mayor", "Search", "Email Updates", and "Contact Us". The main content area is titled "Products > BYTES of the BIG APPLE™" and features a "Printable Version" icon. The page describes the "BYTES of the BIG APPLE" as a family of software, data, and geographic base map files for the City of New York. It provides links for "Data Files", "Geographic Files", and "Applications". A "Data Files:" section also includes these links. A yellow box contains the following information: "PLUTO™ © 2003-06. NYC Department of City Planning. All rights reserved. License agreement required - please call 212-720-3505 for more information. Extensive land use and geographic data at the tax lot level in ASCII comma-delimited format. The PLUTO files contain more than seventy fields derived from data maintained by city agencies. Tax lot data for selected tax blocks or Community Districts can be extracted using the PLUTO Select application which is included with this product." Below this box, there is a table with three columns: "User Guide", "Sample", and "Metadata / File Layout". The table lists the release date as "05D", the date of data as "August 2005 - January 2006", and the price as "\$250 Citywide".

Address <http://www.nyc.gov/html/dcp/html/bytes/applbyte.shtml>

Google Go

Residents | Business | Visitors | Government | Office of the Mayor | Search | Email Updates | Contact Us

NYC.gov
always open
NEW YORK CITY
DEPARTMENT OF CITY PLANNING
NYC.gov/planning

Search DCP > Go

Department of City Planning - "Shaping the City's Future"

Printable Version

Products > BYTES of the BIG APPLE™

BYTES of the BIG APPLE™




BYTES of the BIG APPLE is a family of software, data and geographic base map files for the City of New York. The Department of City Planning offers these products for free download or by a license agreement.

[Data Files](#) | [Geographic Files](#) | [Applications](#)

Data Files: [Data Files](#) | [Geographic Files](#) | [Applications](#)







PLUTO™ © 2003-06. NYC Department of City Planning. All rights reserved.
License agreement required - please call 212-720-3505 for more information.

Extensive land use and geographic data at the tax lot level in ASCII comma-delimited format. The PLUTO files contain more than seventy fields derived from data maintained by city agencies. Tax lot data for selected tax blocks or Community Districts can be extracted using the PLUTO Select application which is included with this product.







Release.....	05D	User Guide	Sample	Metadata / File Layout
Date of Data.....	August 2005 - January 2006			
Price.....	\$250 Citywide			

Bytes of the Big Apple Website 2




Political & Election Districts:
Use the links below to download geographic base files of political and election districts in New York City. These files were generated from the OSC release of the Department of City Planning's Geosupport System.

 <p>New York City State Assembly Districts</p> <p>Version #31: MapInfo Table (119 k) ArcView Shapefile (172 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>	 <p>New York City City Council Districts</p> <p>Version #31: MapInfo Table (74 k) ArcView Shapefile (116 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>
 <p>New York City Congressional Districts</p> <p>Version #31: MapInfo Table (97 k) ArcView Shapefile (97 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>	 <p>New York City State Senate Districts</p> <p>Version #31: MapInfo Table (119 k) ArcView Shapefile (150 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>
 <p>New York City Election Districts</p>	 <p>New York City Municipal Court Districts</p>


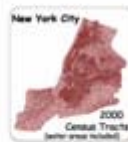

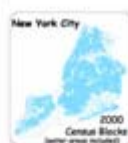
School, Health, Fire & Police:
Use the links below to download geographic base files of boundaries of school districts, police precincts, fire companies, health areas and health center districts in New York City. These files were generated from the OSC release of the Department of City Planning's Geosupport System.

 <p>New York City Instructional Regions</p> <p>Version #31: MapInfo Table (60 k) ArcView Shapefile (133 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>	 <p>New York City School Districts</p> <p>Version #31: MapInfo Table (129 k) ArcView Shapefile (186 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>
 <p>New York City Fire Companies</p> <p>Version #31: MapInfo Table (189 k) ArcView Shapefile (300 k)</p> <p>Version #5A Beta: MapInfo Table (149 k) ArcView Shapefile (172 k)</p>	 <p>New York City Police Precincts</p> <p>Version #31: MapInfo Table (119 k) ArcView Shapefile (154 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>
 <p>New York City Health Center Districts</p> <p>Version #31: MapInfo Table</p>	 <p>New York City Health Areas</p> <p>Version #31: MapInfo Table</p>

Borough & Community Districts:
Use the links below to download geographic base files of borough boundaries and community districts in New York City. These files were generated from the OSC release of the Department of City Planning's Geosupport System.

 <p>New York City Boroughs</p> <p>Version #31: MapInfo Table (77 k) ArcView Shapefile (143 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>	 <p>New York City Boroughs Including Water Areas</p> <p>Version #31: MapInfo Table (8 k) ArcView Shapefile (33 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>
 <p>New York City Community Districts</p> <p>Version #31: MapInfo Table (119 k) ArcView Shapefile (201 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>	

Census Blocks & Tracts:
Use the links below to download geographic base files of 2000 Census Tracts and Census Blocks in New York City. These files were generated from the OSC release of the Department of City Planning's Geosupport System.

 <p>New York City 1990 Census Tracts</p> <p>Version #31: MapInfo Table (433 k) ArcView Shapefile (616 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>	 <p>New York City 2000 Census Tracts Including Water Areas</p> <p>Version #31: MapInfo Table (175 k) ArcView Shapefile (154 k)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>
 <p>New York City 2000 Census Blocks</p> <p>Version #31: MapInfo Table (2.4 Mb) ArcView Shapefile (2.4 Mb)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>	 <p>New York City 2000 Census Blocks Including Water Areas</p> <p>Version #31: MapInfo Table (2.4 Mb) ArcView Shapefile (2.4 Mb)</p> <p>Version #5A Beta: MapInfo Table (119 k) ArcView Shapefile (172 k)</p>

Census Bureau Website

Download
Boundary Files

Descriptions
and Metadata

Technical
Information

Boundary Files
Site News

Download [Generalized](#) Cartographic Boundary Files

Click on the year/vintage next to the boundary file type you want to download.
(There are no plans to create Block level boundary files.)

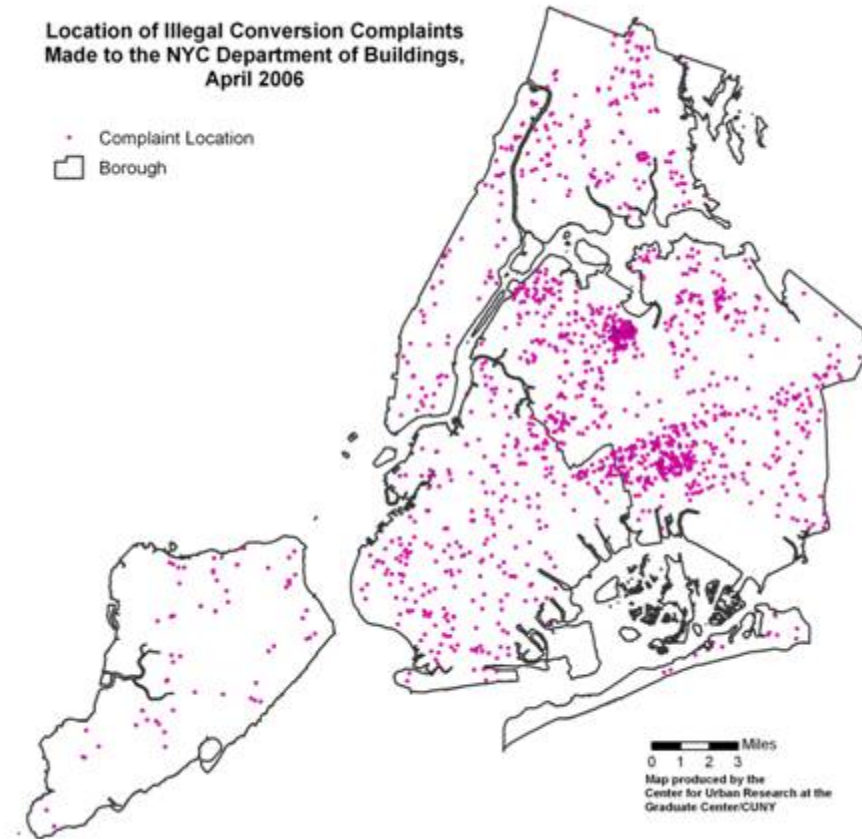
Alaska Native Regional Corporations: [2000](#)
American Indian Areas/Alaska Native Areas/Hawaiian Home Lands: [2000](#) | [1990](#)
American Indian Tribal Subdivisions: [2000](#)
Census Block Groups: [2000](#) | [1990](#)
Census Divisions: [2000](#)
Census Regions: [2000](#)
Census Tracts: [2000](#) | [1990](#)
Congressional Districts: [109th](#) | [108th](#) | [107th](#) | [106th](#) | [105th](#) | [104th](#) | [103rd](#)
Consolidated Cities: [2000](#)
County and County Equivalent Areas: [2000](#) | [1990](#)
County Subdivisions: [2000](#) | [1990](#)
Incorporated Places/Census Designated Places: [2000](#) | [1998](#) | [1990](#)
Metropolitan and Micropolitan Statistical Areas: [2003](#) | [1999](#) | [1995](#) | [1990](#)
New England County Metropolitan Areas: [2000](#)
New England City and Town Areas: [2003](#)
Oregon Urban Growth Areas: [2000](#)
Public Use Microdata Areas - 1 Percent: [2000](#)
Public Use Microdata Areas - 5 Percent: [2000](#)
School Districts - Elementary: [2000](#)
School Districts - Secondary: [2000](#)
School Districts - Unified: [2000](#)
State and State Equivalent Areas: [2000](#) | [1990](#)
State Legislative Districts - Lower/House: [2000](#)
State Legislative Districts - Upper/Senate: [2000](#)
Subbarrios (Puerto Rico Only): [2000](#)
Traffic Analysis Zones: [2000](#)
Tribal Block Groups: [2000](#)
Tribal Census Tracts: [2000](#)
Urban Areas: [2000](#) | [1990](#)
Voting Districts: [2000](#)
3-Digit ZIP Code Tabulation Areas (ZCTAs): [2000](#)
5-Digit ZIP Code Tabulation Areas (ZCTAs): [2000](#)

Census 2000: Census Tracts in ArcView Shapefile (.shp) format

Alabama - [tr01_d00_shp.zip](#) (878,228 bytes)
Alaska - [tr02_d00_shp.zip](#) (538,034 bytes)
Arizona - [tr04_d00_shp.zip](#) (609,863 bytes)
Arkansas - [tr05_d00_shp.zip](#) (650,769 bytes)
California - [tr06_d00_shp.zip](#) (2,303,684 bytes)
Colorado - [tr08_d00_shp.zip](#) (593,672 bytes)
Connecticut - [tr09_d00_shp.zip](#) (220,667 bytes)
Delaware - [tr10_d00_shp.zip](#) (66,456 bytes)
District of Columbia - [tr11_d00_shp.zip](#) (26,099 bytes)
Florida - [tr12_d00_shp.zip](#) (967,180 bytes)
Georgia - [tr13_d00_shp.zip](#) (1,079,095 bytes)
Hawaii - [tr15_d00_shp.zip](#) (95,658 bytes)
Idaho - [tr16_d00_shp.zip](#) (383,992 bytes)
Illinois - [tr17_d00_shp.zip](#) (1,037,888 bytes)
Indiana - [tr18_d00_shp.zip](#) (542,204 bytes)
Iowa - [tr19_d00_shp.zip](#) (426,715 bytes)
Kansas - [tr20_d00_shp.zip](#) (400,984 bytes)
Kentucky - [tr21_d00_shp.zip](#) (959,474 bytes)
Louisiana - [tr22_d00_shp.zip](#) (730,734 bytes)
Maine - [tr23_d00_shp.zip](#) (179,306 bytes)
Maryland - [tr24_d00_shp.zip](#) (447,335 bytes)
Massachusetts - [tr25_d00_shp.zip](#) (399,790 bytes)
Michigan - [tr26_d00_shp.zip](#) (947,308 bytes)
Minnesota - [tr27_d00_shp.zip](#) (640,203 bytes)
Mississippi - [tr28_d00_shp.zip](#) (482,941 bytes)
Missouri - [tr29_d00_shp.zip](#) (1,013,417 bytes)
Montana - [tr30_d00_shp.zip](#) (586,050 bytes)

Geographically Coding Data

- Commonly called geocoding
 - Entering address into Map Quest is geocoding
- Creates point data
- Involves assigning the X and Y coordinates
 - Usually based on street address
 - To an intersection
 - To the center of a polygon



Applications for Geocoding

- Individual People/Households
 - Voters
 - Survey Respondents
 - Students
- Locations
 - Food pantries
 - Hospitals
- Events
 - Crimes
 - E-Coli Cases

New York City Data Sources, Part I

- U.S. Bureau of the Census
 - Decennial Census Public Use Microdata
 - American Community Survey Data (ACS)
 - Census and ACS Summary File
 - New York City Housing and Vacancy Survey
- U.S. Department of Labor
 - Current Population Survey
- Even when individual data, generally limited geographic information

Census Bureau Website

The screenshot shows a web browser window displaying the U.S. Census Bureau website. The address bar shows the URL <http://www.census.gov/main/www/cen2000.html>. The browser's address bar also includes a search engine (Google), navigation buttons (Go, Back, Forward), and various utility icons like Bookmarks, Check, AutoLink, and Settings. A notification bar at the top indicates that a pop-up is blocked.

The main content area features a blue header with the text "U.S. Census Bureau" and navigation links for "Census 2000 Gateway" and "Glossary". Below this is a large graphic for the "United States Census 2000" with the tagline "Your Gateway to Census 2000". A message of gratitude to America is displayed, stating that the population of the U.S. on April 1, 2000 was 281,421,906, with a link to a PDF document.

The website is organized into several sections:

- Information Links:** A sidebar on the left containing links for News Media, Introduction to Census 2000 Data, Release Schedules by Product, Geography, and Subject, Census Store, Evaluations, Special Tabulations, Count Question Resolution, and Notes and Errata.
- Access Data by Geography:** A central section with two main options: "American FactFinder" (Tables and maps of Census 2000 data for all geographies to the block level) and "State & County QuickFacts" (Summaries of the most requested data for states and counties).
- Data Highlights:** A section for "Data Highlights" providing documentation and FTP access for the U.S., states, counties, places (cities & towns), and more. It includes a dropdown menu for "Select a state:" currently set to "United States" and a "Go" button.
- Census Data:** A section at the bottom with "Rankings and Comparisons (PHC-T)" (Tables showing population change, comparisons with 1990, Race and Hispanic or Latino origin, and other topics for states, counties, and places) and "Census 2000 Data Releases" (links to Demographic Profiles and Summary Files 1, 2, 3, and 4).

The browser's status bar at the bottom shows the "Internet" icon and a small security warning icon.

More of the Census Bureau Website

□ Summary Files

- Very extensive tables of data
- Some at the block level, most at the tract level

□ Public Use Microdata

- Individual and Household Records
- Sample of all long-form respondents
- Can be analyzed at the PUMA
- Most flexible

□ American Community Survey

Census 2000 Data Releases

- [Demographic Profiles](#)
- [Summary File 1](#)
- [Summary File 2](#)
- [Summary File 3](#)
- [Summary File 4](#)
- [American Indian and Alaska Native Summary File \(AIANSF\)](#)
- [Congressional Apportionment](#)
- [Congressional District Summary Files \(108th\)](#)
- [Congressional District Summary Files \(109th\)](#)
- [Resident Population](#)
- [Redistricting Data](#)

Microdata

- [1-Percent Public Use Microdata Sample \(PUMS\) Files](#)
- [5-Percent Public Use Microdata Sample \(PUMS\) Files](#)

Selected Special Tabulations

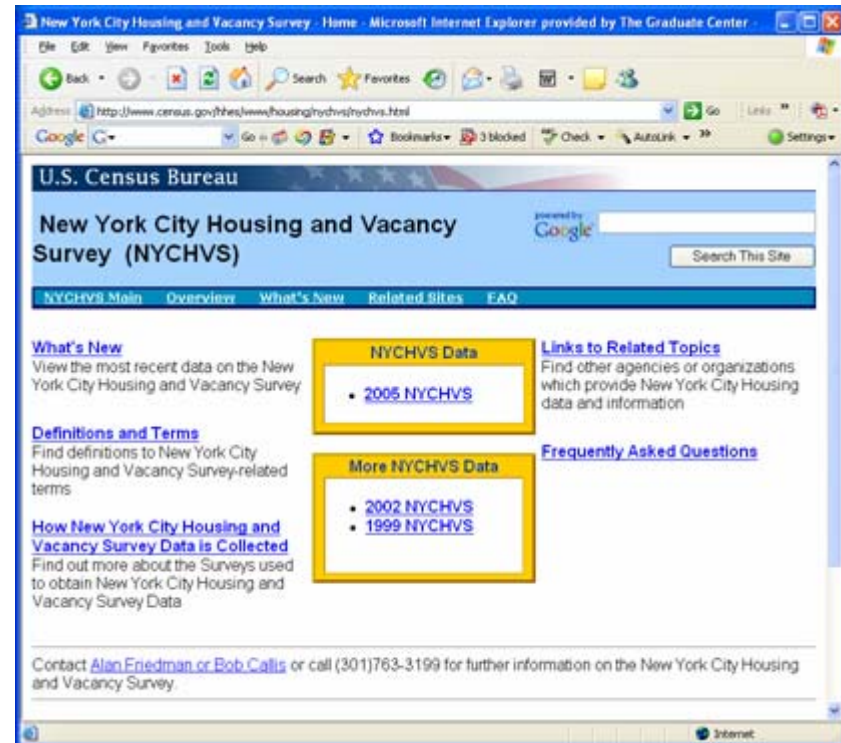
- Worker Flow Files
 - [County-To-County](#)
 - [Minor Civil Division \(MCD\) to County and County to MCD](#)
- [Migration Data and Reports](#)

American Community Survey

A critical element in the re-engineered 2010 census plan that provides annual socioeconomic data

New York City Housing and Vacancy Survey

- ❑ Conducted every three years by the Census Bureau for the city
- ❑ Large sample (approximately 18,000 housing units)
- ❑ Both household and individual records
- ❑ Geography matches the decennial Census

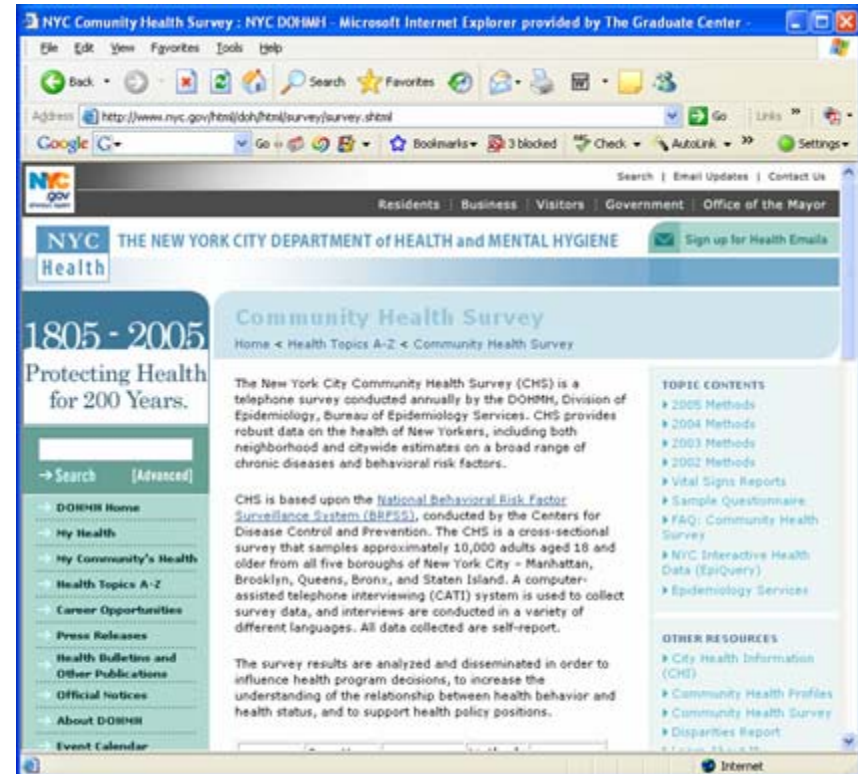


New York City Data Sources, Part II

- New York City Agencies
 - Annual Health Survey
 - Administrative Data from individual agencies
 - Neighborhood profiles at *My Neighborhood Statistics*
(<http://gis.nyc.gov/ops/mmr/address.jsp?app=MMR>)
- Infoshare has compiled an extensive set NYC data in a flexible data and mapping engine
(www.infoshare.org/)
- University Neighborhood Housing Program (UNHP) has put together a guide to New York City community-based data
(www.unhp.org/crg.html)

Annual NYC Community Health Survey

- Annual phone survey (2002-2005 data available)
- Sample of around 10,000 New Yorkers age 18 and older
- Public use data for subset of questions is available
- At the United Hospital Fund Neighborhood

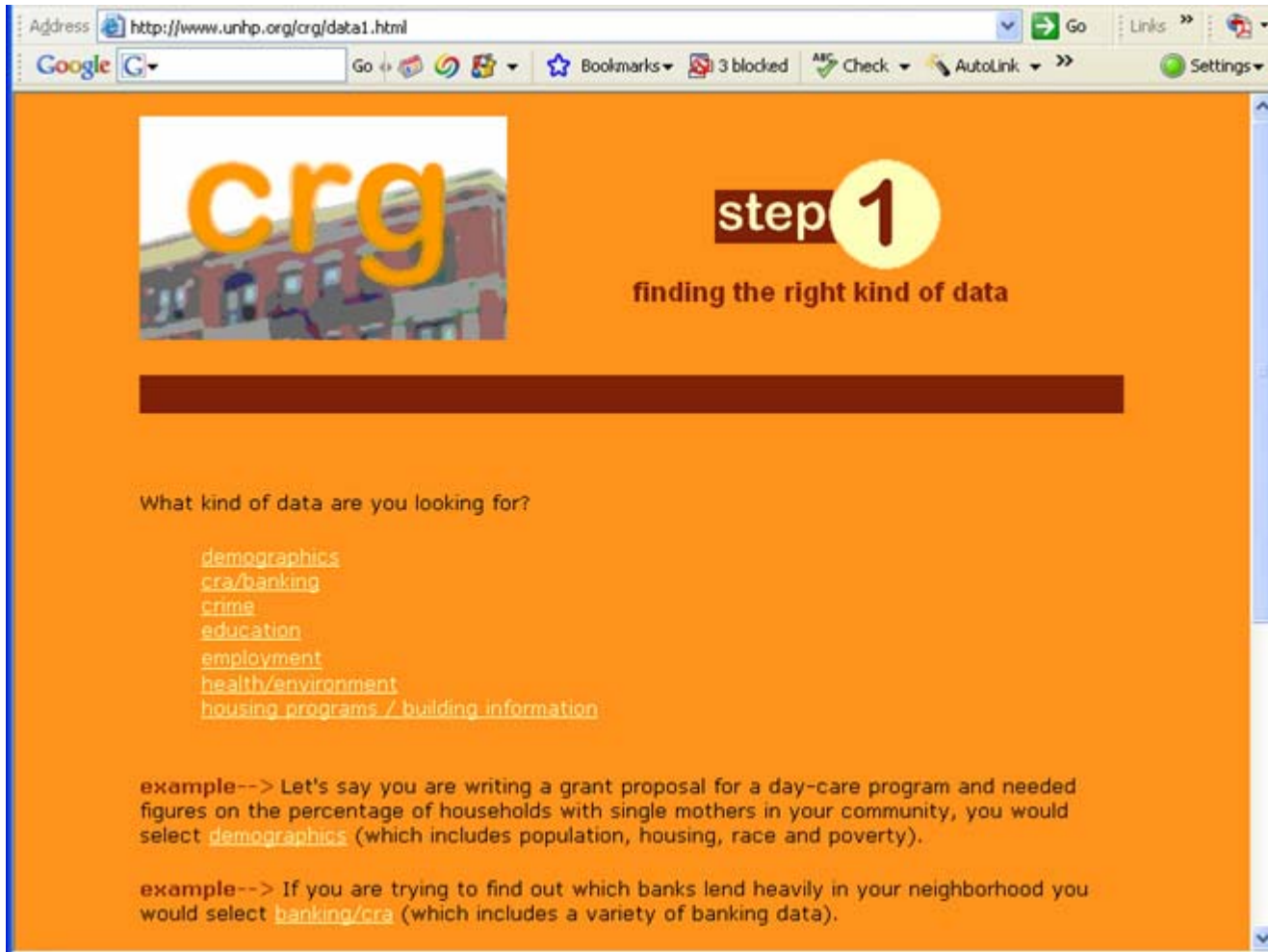


Infoshare Website

The screenshot shows the Infoshare Online website in a web browser. The address bar displays <http://www.infoshare.org/>. The browser's search bar contains "Google" and "Infoshare". The website's navigation bar includes "Area Profile", "Area Comparison", and "Two-Way Table". A sidebar on the left contains links for "Main Menu", "User Guide", "FAQs", "Links", "Email Us", and "About Us". The main content area is divided into several sections:

- Header:** "Hello, Graduate School User"
- Welcome to Infoshare Online:** A section describing the website's capabilities, including population statistics, immigration trends, socio-economic indicators, birth and death data, hospitalizations, local economic data, and more. It mentions that users can profile an area, compare areas across a region, and produce their own tabulations. It also notes that users can print data or save it for use in spreadsheets, presentations, and mapping programs.
- Main Menu:** A section with three numbered items:
 - 1 - Profile an area:** Select one area, such as a Zip Code, Congressional District, or County, and look at a variety of information for that area. For example, you might select the a Zip Code in Brooklyn and look at the 2000 Census Household Type tables for that Zip Code.
 - 2 - Compare areas using selected data:** Show the values of selected data elements for a list of areas within a larger region - for instance, Zip Codes within a Borough or County or Counties within a State.
 - 3 - Create your own two-way table:** Define the columns, rows, and conditions for your two-way table from a wide choice of data elements.
- Current region:** A dropdown menu set to "New York City".
- DEMOGRAPHICS:** A list of data categories including "2000 Census ('Long form')", "2000 Census ('Short form')", "1990 Census", "1980 Census", "Immigration", "Public Use Micro-Sample (2000 Census)", "Public Use Micro-Sample (1990 Census)", and "Housing & Vacancy Survey (Local Census)".
- SOCIO-ECONOMICS:** A list of data categories including "Land Use (Detailed)", "Land Use", "Public Schools - Elem & Mid", "Public Assistance", "Food Stamp Eligibility", "WIC Participation", "Child Care", "Crime", "Juvenile Detention", "Public Housing", "Facilities", "Personal Income", and "Businesses".
- News & Updates:** A section with a highlighted announcement: "The 'long form' 2000 Census is here! Detailed data on income, occupation, ancestry, family structure, language, and more -- using **any neighborhood definition** you wish. **Only in Infoshare** will you find that!"

Community Resource Guide Website



The screenshot shows a web browser window with the address bar displaying <http://www.unhp.org/crg/data1.html>. The browser's address bar includes a search engine (Google), navigation buttons (Go, Back, Forward), and various toolbars (Bookmarks, Check, AutoLink, Settings). The main content area has an orange background and features the 'crg' logo on the left, which consists of the letters 'crg' in a bold, orange font over a stylized image of a building. To the right of the logo, the text 'step 1' is displayed in a white font inside a dark red circle, with 'finding the right kind of data' written below it in a dark red font. A thick dark red horizontal bar is positioned below the 'step 1' heading. The text 'What kind of data are you looking for?' is centered on the page. Below this text is a list of data categories, each preceded by a small red square icon: [demographics](#), [cra/banking](#), [crime](#), [education](#), [employment](#), [health/environment](#), and [housing programs / building information](#). Two example paragraphs follow, each starting with 'example-->'. The first example describes finding data for a grant proposal for a day-care program, recommending the 'demographics' category. The second example describes finding data on banks in a neighborhood, recommending the 'banking/cra' category.

Address <http://www.unhp.org/crg/data1.html>

Google Go Links

Bookmarks Check AutoLink Settings



step 1
finding the right kind of data

What kind of data are you looking for?

- [demographics](#)
- [cra/banking](#)
- [crime](#)
- [education](#)
- [employment](#)
- [health/environment](#)
- [housing programs / building information](#)

example--> Let's say you are writing a grant proposal for a day-care program and needed figures on the percentage of households with single mothers in your community, you would select [demographics](#) (which includes population, housing, race and poverty).

example--> If you are trying to find out which banks lend heavily in your neighborhood you would select [banking/cra](#) (which includes a variety of banking data).

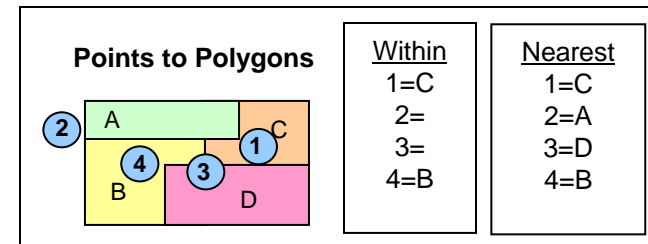
Using GIS to Join or Merge Data

- Familiar with joining data based on ID
- ID matches can be done with GIS
 - Possible to append additional variables or measures from a table to a geographic file
- GIS programs can join based on geography/spatial relationships
 - Either a one-to-one match, such as one Community Board per hospital
 - Or a one-to-many match, such as multiple hospitals within a Community Board

Spatial Joins, Part I

□ Point to Polygon

- Completely within
- Nearest



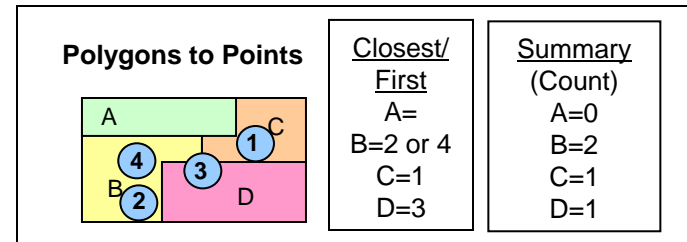
□ Can append neighborhood descriptive statistics to individuals, locations, or events

- The relationship of the childhood neighborhood and educational outcomes
- The relationship between neighborhood characteristics and voting behavior

Spatial Joins, Part II

□ Polygon to Point

- Closest or first found
- Summary of all points

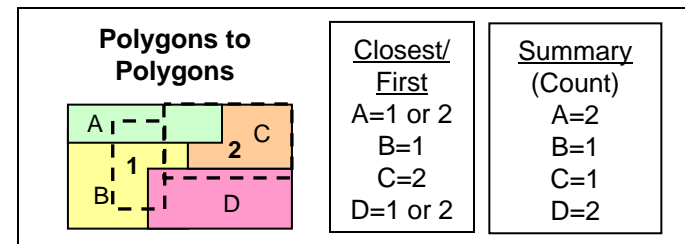


□ Can aggregate individuals, events, or locations to a geographic area

- The distribution of illegal housing conversion complaints among New York City neighborhoods

Spatial Joins, Part III

- Polygon to Polygon
 - Closest or first found
 - Summary of all polygons that intersect



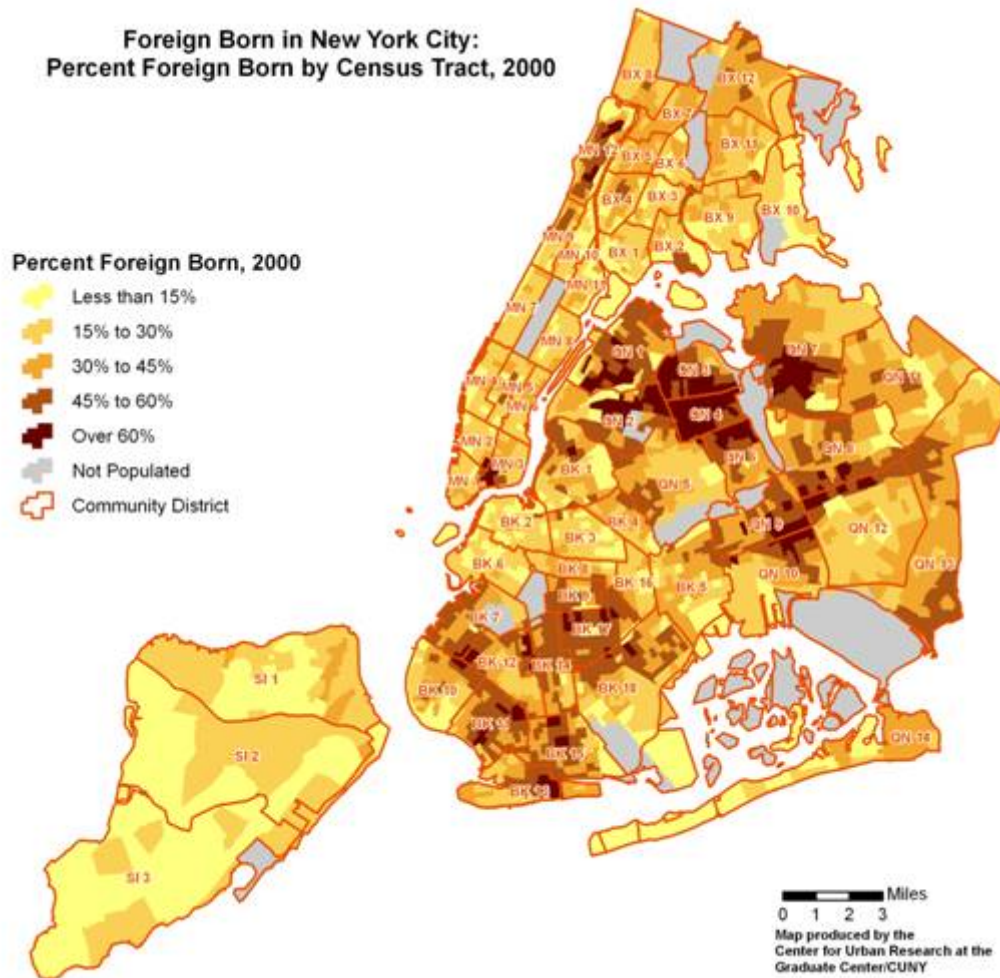
- If geographic areas are nested, such as census blocks within a tract, can calculate aggregate measures for an area
 - Combining Community Boards to get be able to merge administrative city data with survey data at the sub-borough

Overlapping New York City Geography

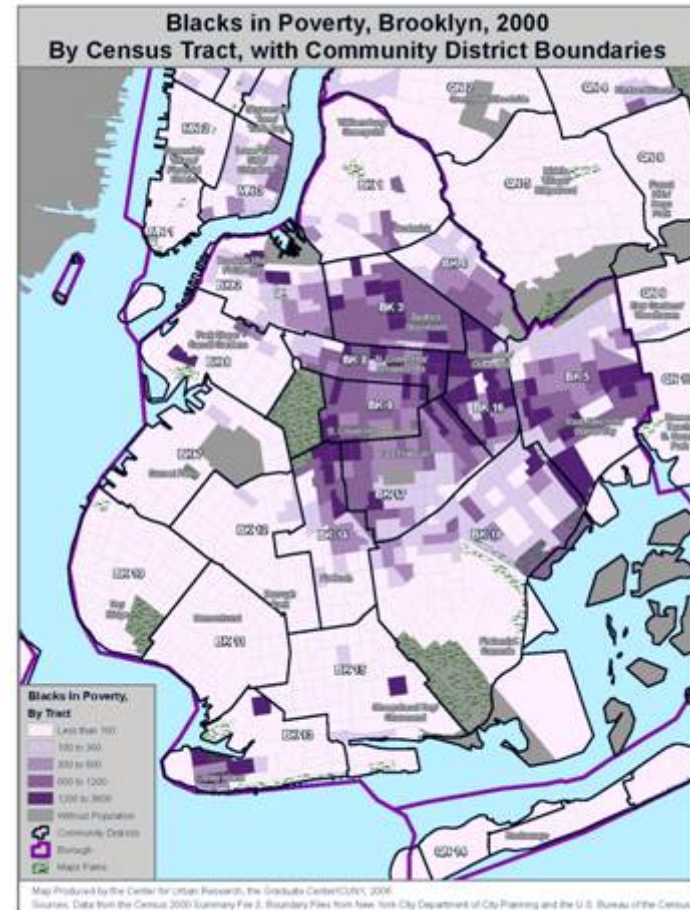
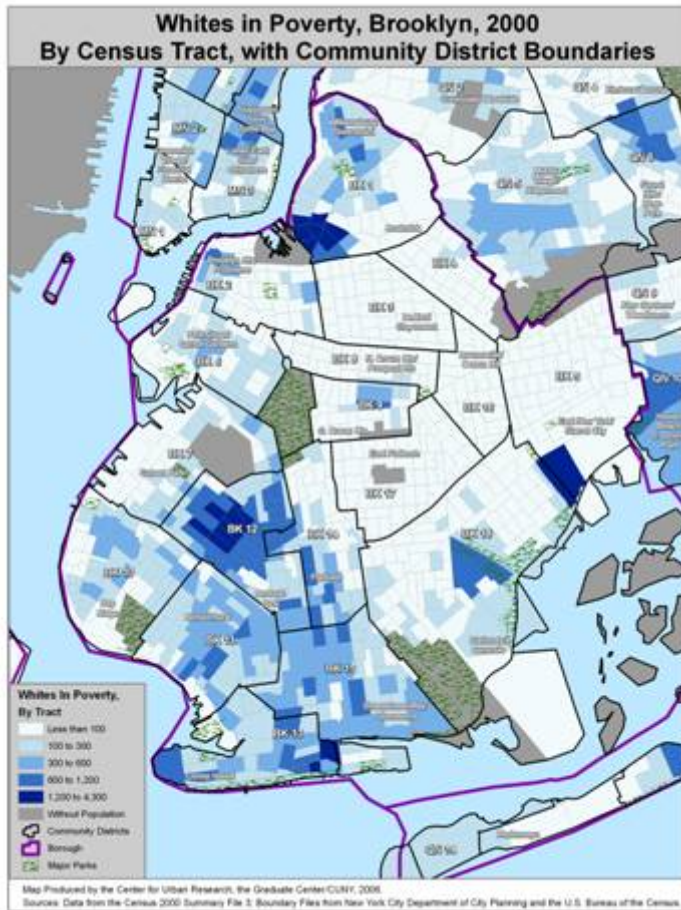
- Boundaries do not match perfectly
- GIS can display multiple layers of geography in one map
- Allow user to see relationship between different geographic areas



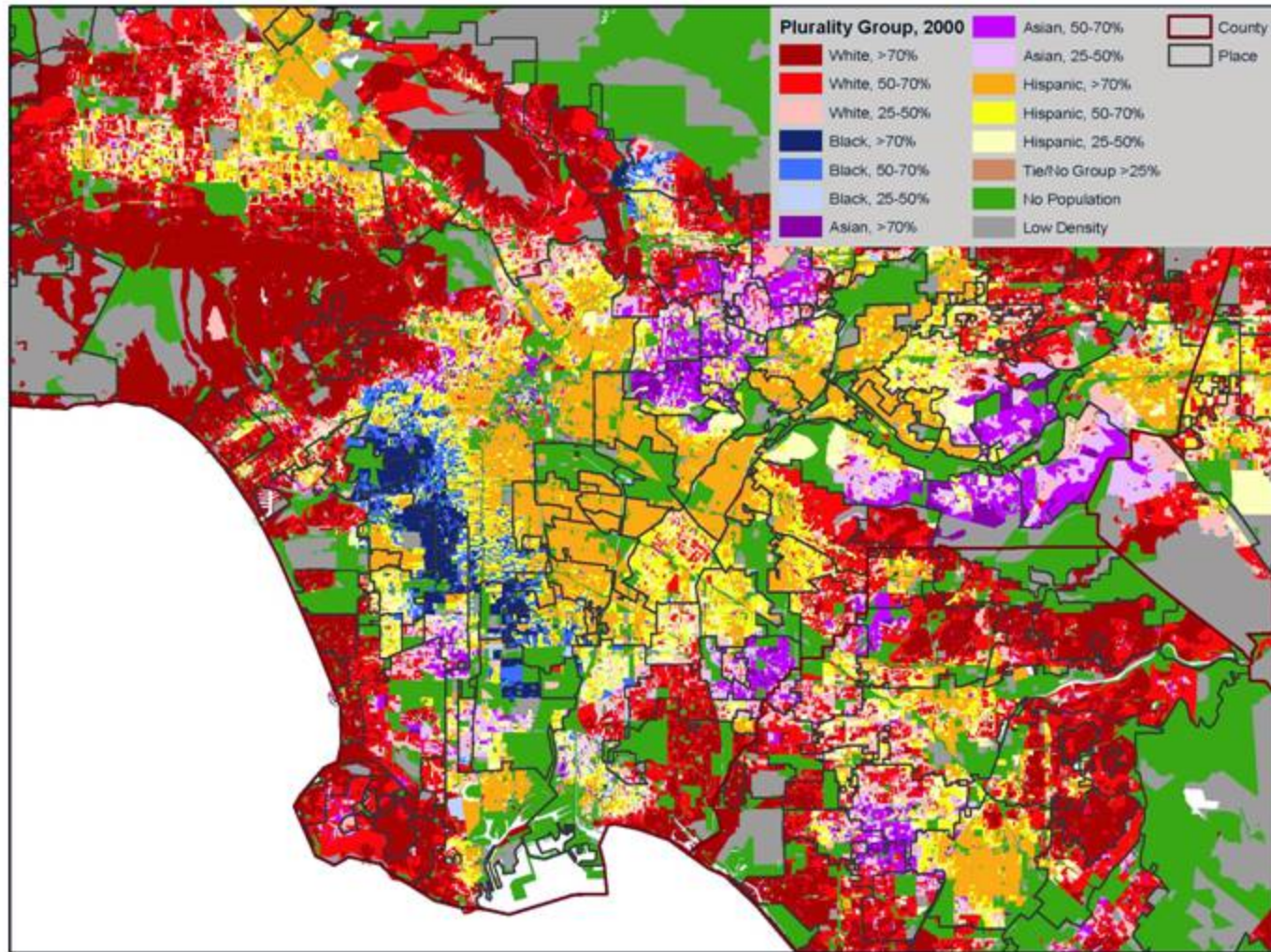
Center for Urban Research Projects



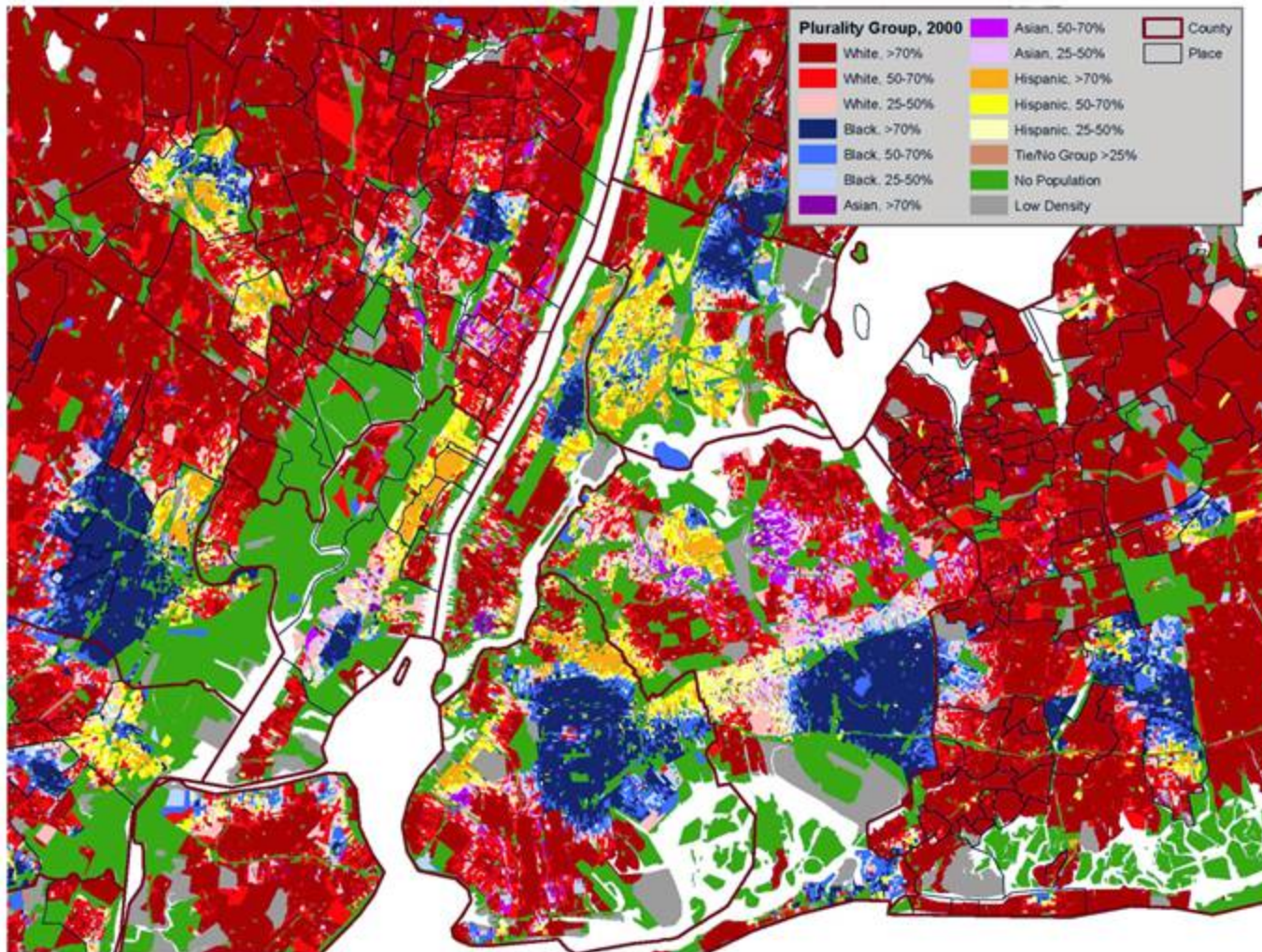
Poverty in New York City



Racial and Ethnic Segregation in LA

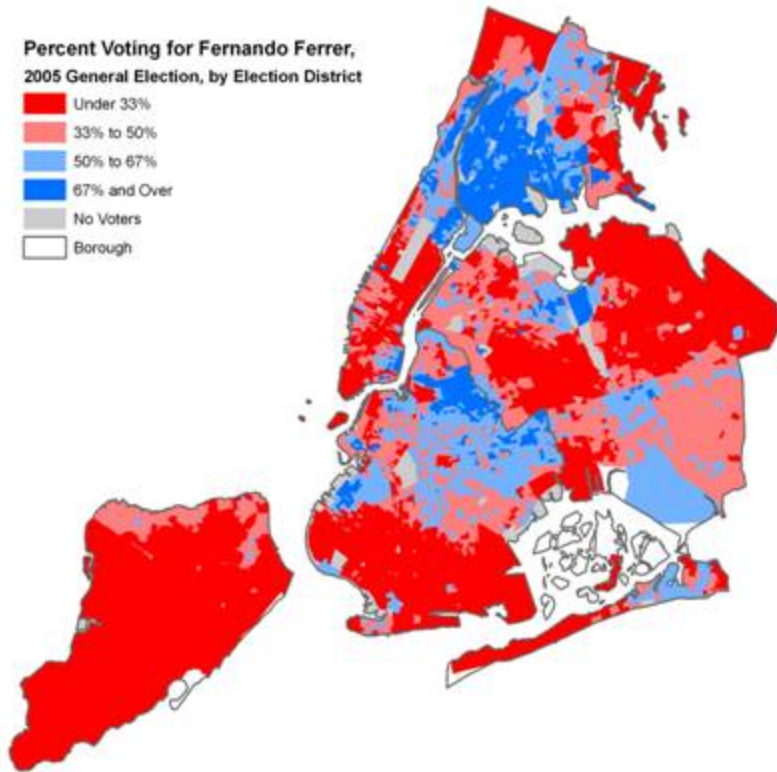
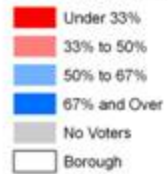


Racial and Ethnic Segregation in NY

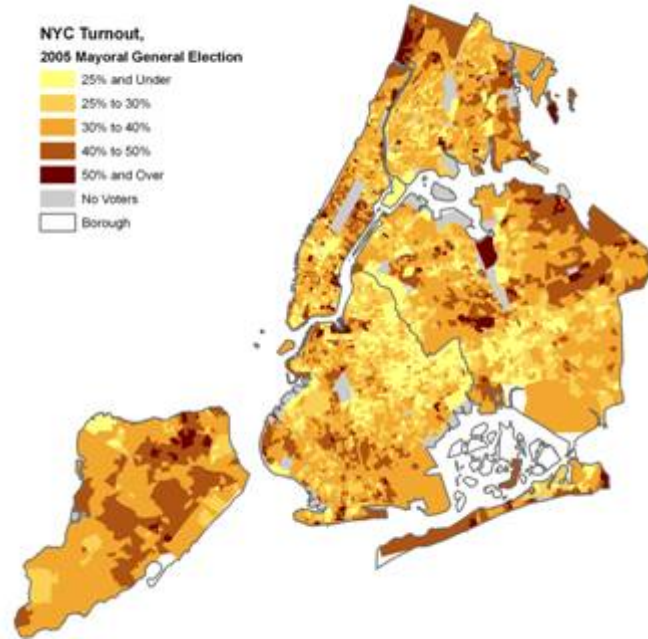
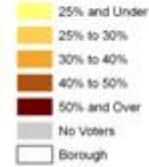


NYC Mayoral Election Results

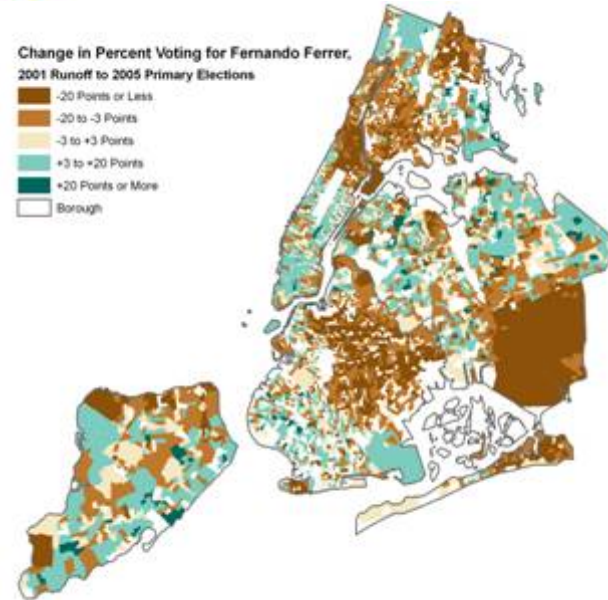
Percent Voting for Fernando Ferrer, 2005 General Election, by Election District



NYC Turnout, 2005 Mayoral General Election



Change in Percent Voting for Fernando Ferrer, 2001 Runoff to 2005 Primary Elections



Conclusion

- ❑ Many possible applications for GIS in social science research
- ❑ Still a new tool for social scientists
- ❑ Statistical advancements
 - Geographically Weighted Regression (Goodchild 2004)
 - Hierarchical Linear Model Data Preparation

References and Sources

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- ❑ NYS GIS Clearinghouse (GIS Files) (www.nysgis.state.ny.us)
- ❑ U.S. Bureau of the Census
 - GIS Files (www.census.gov/geo/www/cob/index.html)
 - Data Files (<http://www.census.gov/main/www/cen2000.html>)
- ❑ Neighborhood profiles at *My Neighborhood Statistics*
(<http://gis.nyc.gov/ops/mmr/address.jsp?app=MMR>)
- ❑ Infoshare Data Extraction (www.infoshare.org/)
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- ❑ New York City Housing and Vacancy Survey
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(<http://www.esri.com/news/arcnews/spring04/articles/social-sciences.html>)
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