

Cities, Schools, and Space

Andy Anderson (Academic Technology Services)
Hilary Moss (Departments of Black Studies & History)

Amherst College



- A research seminar for juniors
- Urban history and education policy
- Potential thesis students encouraged!



Northeast Arc Users Group Annual Conference — Saratoga Springs 11/13/2011

Cities, Schools, & Space

Announcements

■ Syllabus

Course Readings

E-reserves

Library Resources

Assignments

Discussion

Dropbox

Expectations & Requirements

Faculty Information

Class Roster

About this Mellon Tutorial



Web
Page

Syllabus

Part One: Cities

Week One: (1/25) Introduction to GIS; Defining Terms

Week Two: (2/1) The Origins of the Urban Crisis

Week Three: (2/8) The Federal Role in Spatial Inequality (Housing)

Week Four: (2/15) The Federal Role in Spatial Inequality, continued (Highways)

Week Five: (2/22) Why do some cities.... Fail? (Urban Renewal)

Week Six: (3/1)While other cities thrive? (Private Institutions)

Part Two: Schools

Week Seven: (3/8): Spatial Inequality and Schools

Week Eight: (3/15) No Class – Spring Break

Week Nine: (3/22) Court-Ordered Desegregation; Backlash Against Busing

Week Ten: (3/29): Road Trip to Cambridge

Week Eleven: (4/5) Replacing Race with Socio-Economic Considerations

Week Twelve: (4/12) Mapping Educational Opportunity and School Choice

Week Thirteen: (4/19) The Supreme Court Reversal

Week Fourteen: (4/26) Final Project Work

Week Fifteen: (5/3) Presentations and Celebrations

Final Projects Due

Many Research Methodologies

- Archival analysis
- Oral interviews



- **GIS:** integrated into the course



Cambridge
Public
Library



Cities, Schools, and Space



Cities, Schools, & Space

Announcements

Syllabus

■ Course Readings

E-reserves

Library Resources

Assignments

Discussion

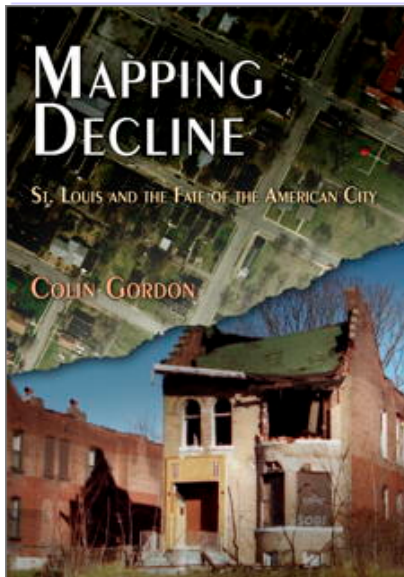
Dropbox

Expectations & Requirements

Faculty Information

Class Roster

About this Mellon Tutorial



Web
Page

Course Readings

Copies of all books will be available for purchase at [Amherst Books](#) and placed on 2-hour reserve at Frost Library. In addition, a number of shorter documents will be available through [the course web site](#).

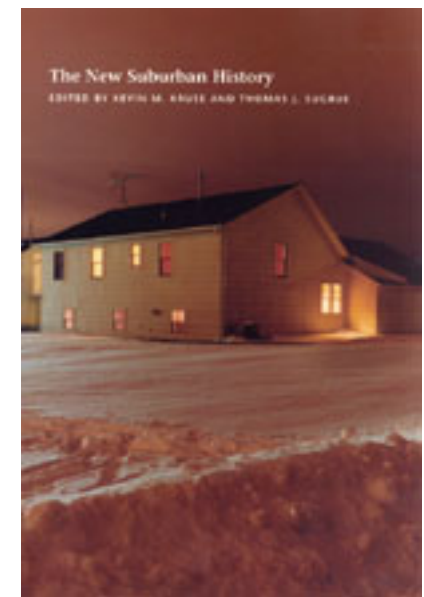
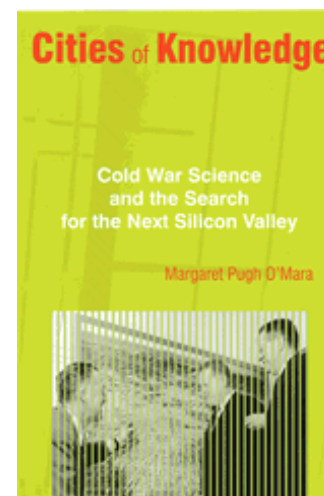
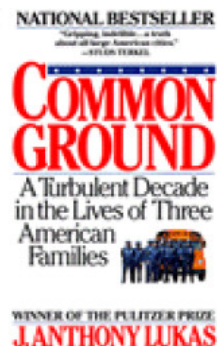
Colin Gordon, *[Mapping Decline: St. Louis and the Fate of the American City](#)* (Penn, 2008)

Richard D. Kahlenberg, *[All Together Now: Creating Middle-Class Schools through Public School Choice](#)* (Brookings, 2001)

J. Anthony Lukas, *[Common Ground: A Turbulent Decade in the Lives of Three American Families](#)* (Vintage, 1986)

Margaret Pugh O'Mara, *[Cities of Knowledge: Cold War Science and the Search for the Next Silicon Valley](#)* (Princeton, 2005)

Thomas J. Sugrue and Kevin Kruse, eds. *[The New Suburban History](#)* (Chicago, 2006)



Cities, Schools, & Space

Announcements

Syllabus

Course Readings

■ E-reserves

Library Resources

Assignments

Discussion

Dropbox

Expectations & Requirements

Faculty Information

Class Roster

About this Mellon Tutorial



Students and parent at Tobin School, Cambridge



Web
Page
(Restricted)

E-reserves for COLQ-32 'Cities, Schools, & Space'

◆ E-Reserve

◆ Type ◆ Due Date

Fisk, Edward. "Controlled Choice in Cambridge, Massachusetts," in <i>Divided We Fail: Coming Together through Public School Choice</i> , 167-208. New York: Century Foundation Press, 2002.		02/01
O'Sullivan, David, and David Unwin. "The Elements of Statistics." In <i>Geographic information Analysis</i> , 384-411. Hoboken, New Jersey: John Wiley & Sons, 2003.		02/01
Hillier, Amy. "Redlining and the Home Owners' Loan Corporation." <i>Journal of Urban History</i> 29, no. 4 (2003): 394-420.		02/08
Hillier, Amy. "Redlining in Philadelphia." In <i>Past Time, Past Place--GIS for History</i> , edited by Anne Kelly Knowles, 79-92. Redlands: ESRI Press, 2002.		02/08
O'Sullivan, David, and David Unwin. "The Pitfalls and Potentials of Spatial Data." In <i>Geographic information Analysis</i> , 26-49. Hoboken, New Jersey: John Wiley & Sons, 2003.		02/08
Mohl, Raymond A. "Planned Destruction--The Interstates and Central City Housing." In <i>From Tenements to the Taylor Homes--In Search of an Urban Housing Policy in Twentieth-Century America</i> , edited by John F. Bauman, Roger Biles and Kristin Szylvian, 226-245. University Park, PA: The Pennsylvania State University Press, 2000.		02/15
O'Sullivan, David, and David Unwin. "Fundamentals: Maps as Outcomes of Processes." In <i>Geographic information Analysis</i> , 51-66, 71, 73-75. Hoboken, New Jersey: John Wiley & Sons, 2003.		02/15
Highsmith, Andrew R. "Demolition Means Progress: Urban Renewal, Local Politics, and State-Sanctioned Ghetto Formation in Flint, Michigan." <i>Journal of Urban History</i> 35, no. 3 (2009): 348-368.		02/22
Hillier, Amy. "Residential Security Maps and Neighborhood Appraisals: The Homeowners' Loan Corporation and the Case of Philadelphia." <i>Social Science History</i> 29, no. 2 (2005): 207-233.		02/22
Lassiter, Matthew D. "De Jure/De Facto Segregation--The Long Shadow of a National Myth." In <i>The Myth of Southern Exceptionalism</i> , edited by Matthew D. Lassiter and Joseph Crespino, 25-48. New York, New York: Oxford University Press, Inc., 2010.		02/22
O'Sullivan, David, and David Unwin. "Area Objects and Spatial Autocorrelation." In <i>Geographic information Analysis</i> , 180-203. Hoboken, New Jersey: John Wiley & Sons, 2003.		02/22
Carriere, Michael. "Fighting the War Against Blight: Columbia University, Morningside Heights, Inc., and Counterinsurgent Urban Renewal." <i>Journal of Planning History</i> 10, no. 1 (2011): 5-29.		03/01
Winling, LaDale. "Students and the Second Ghetto: Federal Legislation, Urban Politics, and Campus Planning at the University of Chicago." <i>Journal of Planning History</i> 10, no. 1 (2010): 59-86.		03/01
Benjamin, Karen. "Suburbanizing Jim Crow: The Impact of School Policy on Residential Segregation." (Submitted).		03/08
Benjamin, Karen. Longview Brochure--Easy to Buy., Submitted.		03/08
Erickson, Ansley T. "Building Inequality: The Spatial Organization of Schooling in Nashville, Tennessee." <i>Journal of Urban History</i> (Submitted).		03/08
Bell, Courtney. "Geography in Parental Choice." <i>American Journal of Education</i> 115, no. 4 (2009): 493-521.		04/12
Dougherty, Jack, and et al. "School Choice in Suburbia: Test Scores, Race, and Housing Markets." <i>American Journal of Education</i> 115, no. 4 (2009): 523-548.		04/12

REDLINING AND THE HOME OWNERS' LOAN CORPORATION

AMY E. HILLIER
University of Pennsylvania

This article analyzes the impact of the residential security maps created by the Home Owners' Loan Corporation (HOLC) during the 1930s on residential mortgages in Philadelphia. Researchers have consistently argued that HOLC caused redlining and disinvestment in U.S. cities by sharing its color-coded maps. Geographic information systems and spatial statistical models were used to analyze address-level mortgage data from Philadelphia to determine if areas with worse grades actually had less access to residential mortgage credit as a result. Findings indicate that the grades on HOLC's map do not explain differences in lending patterns with the exception of interest rates, which were higher in areas colored red. Archival material and journal articles from the 1930s also reveal that lenders were avoiding areas colored red before HOLC made its maps, that HOLC's maps were not widely distributed, and that lenders had other sources of information about real estate risk levels.

Keywords: *redlining; discrimination; Home Owners' Loan Corporation; Federal Housing Administration; Philadelphia*

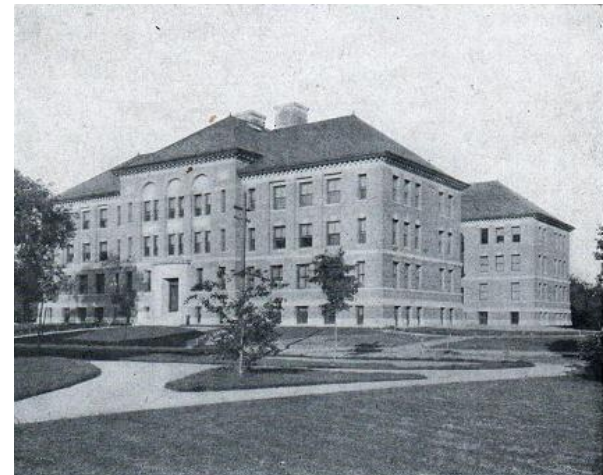


Web
Page

In America, a child's address,
more than any other factor,
often determines
what kind of public education
he or she will receive.



Black School in Louisa County, Virginia, ca. 1935
(LOC/NAACP)



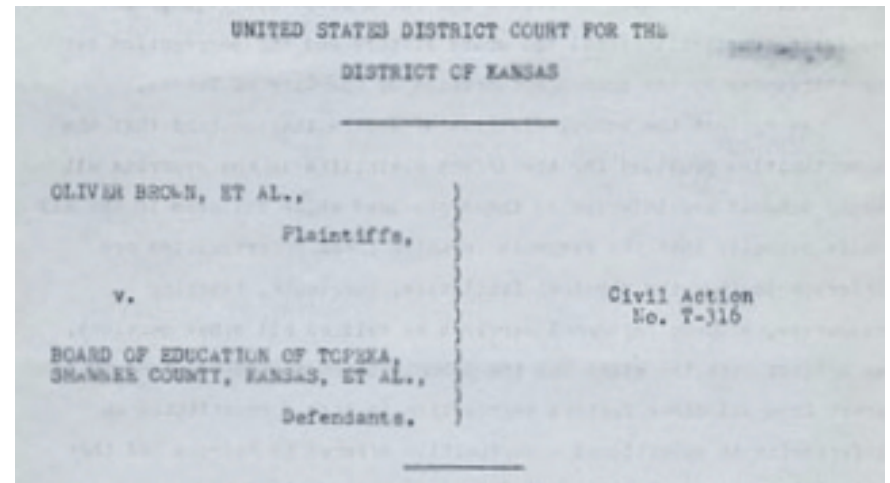
Cambridge, Massachusetts Latin School, 1916
(CHLS Yearbook)

Cities, Schools, and Space



De Jure Segregation

- Legal segregation of public schools by race banned



nationwide in 1954 — separate, *not* equal

- Unequal educational opportunities still exist for a variety of reasons



De Facto Segregation

- Federal policies that expanded suburbs and facilitated “white flight” and job loss:
 - Mortgage assistance
 - Investment depreciation
 - Highway construction
 - Public housing
 - Urban renewal



Cities, Schools, and Space



Disguised Segregation

- Subtle school segregation can still exist:
 - Shifting school catchment areas
 - Building new schools in white/upper-class areas at the expense of existing facilities
 - Educational tracking of students



Cities, Schools, and Space



Cambridge, Massachusetts

- A progressive city of 110,000 people



Massachusetts Institute of Technology

- Home to two major institutions of higher education: Harvard University and the Massachusetts Institute of Technology.

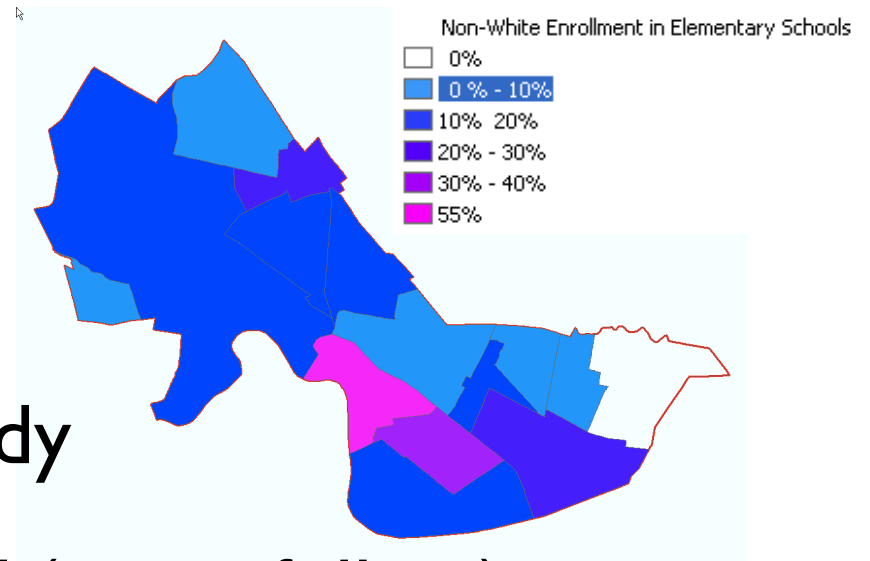
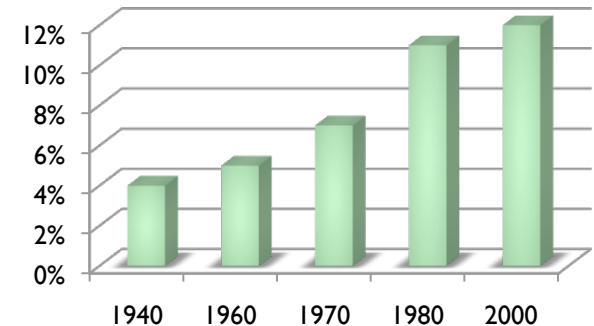
Cities, Schools, and Space



Cambridge Demographics

- Black and Hispanic populations substantially increased in the late 20th century
- 1965 state law: One school already *racially imbalanced* (more follow).

Black Population



Cambridge & Controlled Choice

- The School Committee

temporized for more than a decade, while

Boston struggled with school bussing.



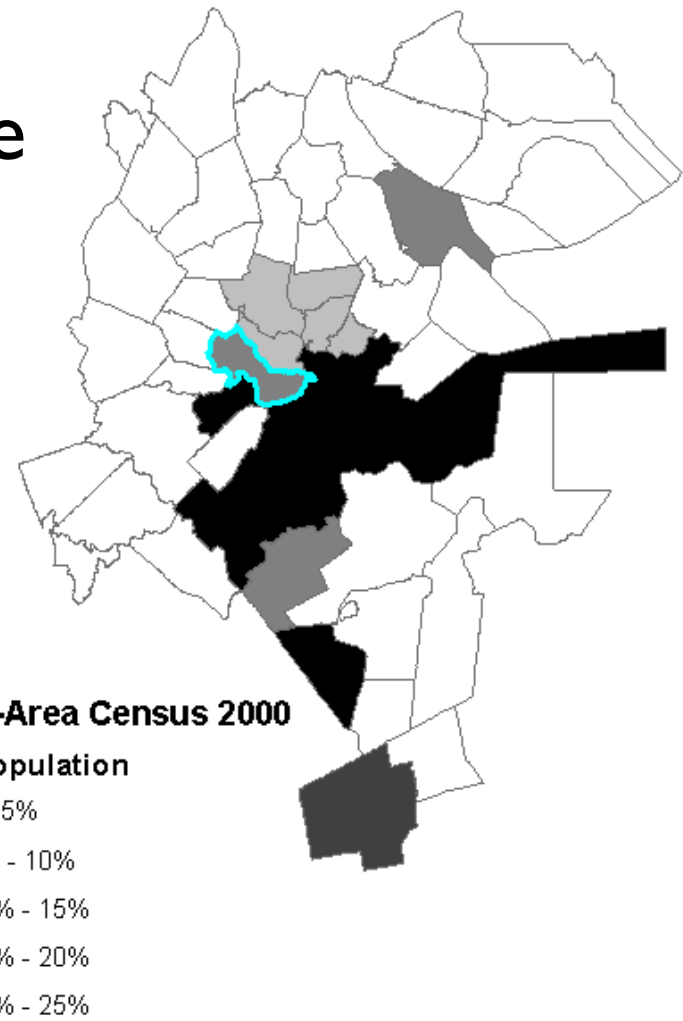
- In 1981 implemented **Controlled Choice**:
 - Completely open enrollment, *within* 10% of average district-wide minority enrollment.
 - Parents chose top four preferred schools.

Cities, Schools, and Space



Learning GIS: Basic Skills

- How does Cambridge compare to nearby communities?
 - Census.gov
1990 - 2010
 - NHGIS.org
≤ 1980



Cities, Schools, and Space



Cities, Schools, & Space

Announcements

Syllabus

Course Readings

E-reserves

Library Resources

■ Assignments

Discussion

Dropbox

Expectations & Requirements

Faculty Information

Class Roster

About this Mellon Tutorial



Tobin School Cafeteria,
Cambridge



Web
Page

GIS for Week 3 (2/8)

Due date: February 8, 2011 at 2:00 pm.

1. Using Excel, copy the table "Demographics of Elementary Schools in Cambridge, Massachusetts, 2000-2001" from p. 171 of [Edward B. Fisk, "Controlled Choice in Cambridge, Massachusetts"](#). Format the table so that it can be used with ArcMap.
2. Add the layer
Cambridge_Schools_2000.shp
to your map, and label it.
3. Join the Fisk table to the
Cambridge School Districts layer.
4. Symbolize the Schools layer by
the percentage of students
receiving subsidized lunch, using
Quantities – Proportional Symbols.

[Read more »](#)

TABLE 1 DEMOGRAPHICS OF ELEMENTARY SCHOOLS IN CAMBRIDGE, MASSACHUSETTS, 2000–2001 (PERCENTAGE)								
	PORTION OF DISTRICT TOTAL	NATIVE AMERICAN	ASIAN	AFRICAN AMERICAN	HISPANIC	WHITE	OTHER BLACK	LUNCH
Agassiz	8	1	16	18	9	43	13	30
Cambridgeport	6	1	8	26	10	50	5	19
Fitzgerald	5	1	10	22	7	43	17	60
Graham and Parks	7	1	8	14	6	46	25	31
Haggerty	5	1	8	26	7	48	9	30
Harrington	10	0	3	21	12	48	15	77
Kennedy	10	2	3	17	43	32	5	64
King	5	0	21	31	10	24	14	79
King Open	6	1	14	26	5	49	5	25
Longfellow	8	0	10	20	26	35	9	53
Morse	7	0	26	25	8	35	6	51
New Academy	5	0	4	39	20	25	13	72
Peabody	8	1	24	17	4	46	8	25
Tobin	10	0	11	34	10	34	10	48
TOTAL	100	1	11	23	14	40	11	48

Source: Data obtained from Cambridge Public Schools Office of Development Assessment.

Creating GIS Data from Text

Cities, Schools, & Space

Announcements

Syllabus

Course Readings

E-reserves

Library Resources

■ Assignments

Discussion

Dropbox

Expectations & Requirements

Faculty Information

Class Roster

About this Mellon Tutorial

Legend

Cambridge Schools 2000:
% Students Receiving
Subsidized Lunch

● 10

● 50

● 100

Massachusetts Census Tracts 2000
Poverty Rate

■ ≤ 5%

■ 5% - 10%

■ 10% - 15%

■ 15% - 20%

■ 20% - 25%

■ 25% - 30%

■ ≥ 30%

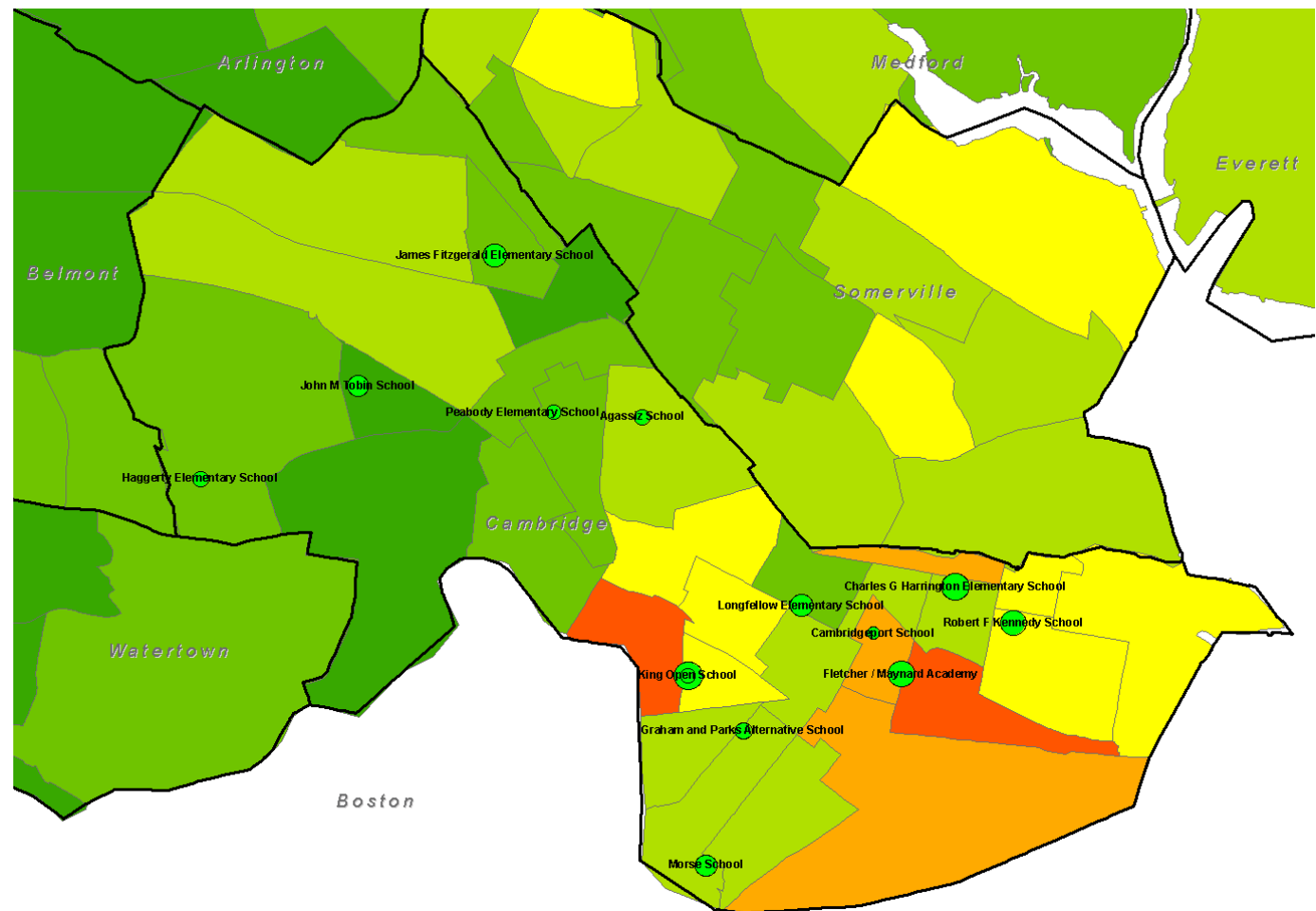


Web
Page

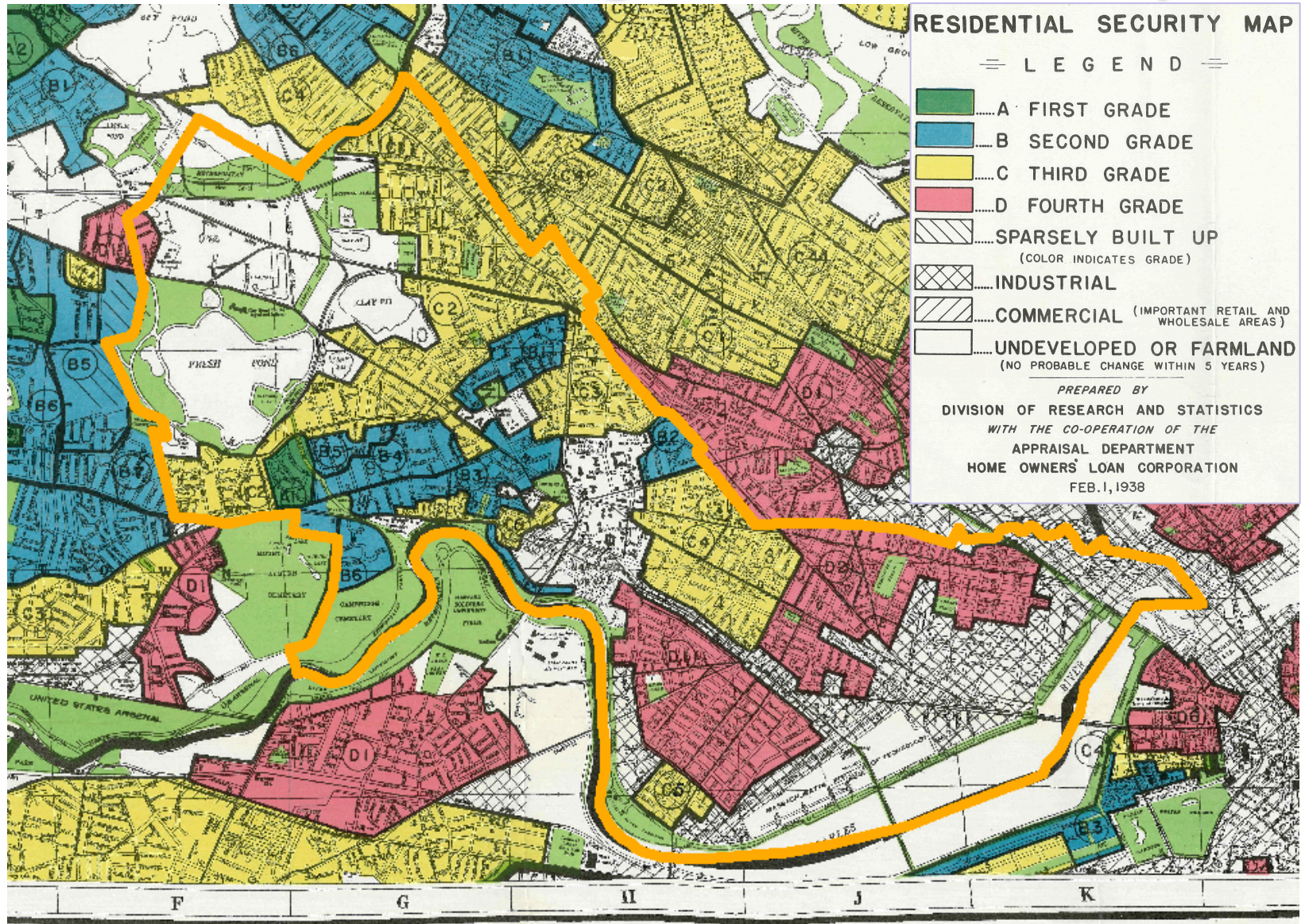
GIS for Week 3 (2/8)

< previous

5. In a web browser, visit the web address www.census.gov, and download the table **P87. Poverty Status in 1999 by Age** for Massachusetts, Middlesex County, Census tracts.
6. Zoom your map to Cambridge, and make sure that its census tracts use the symbology **Quantities – Graduated colors**, and a set of distinguishable poverty classes.
7. How do the schools with a larger percentage of students receiving subsidized lunch compare with the higher-poverty areas of Cambridge?



Georeferencing Historical Maps

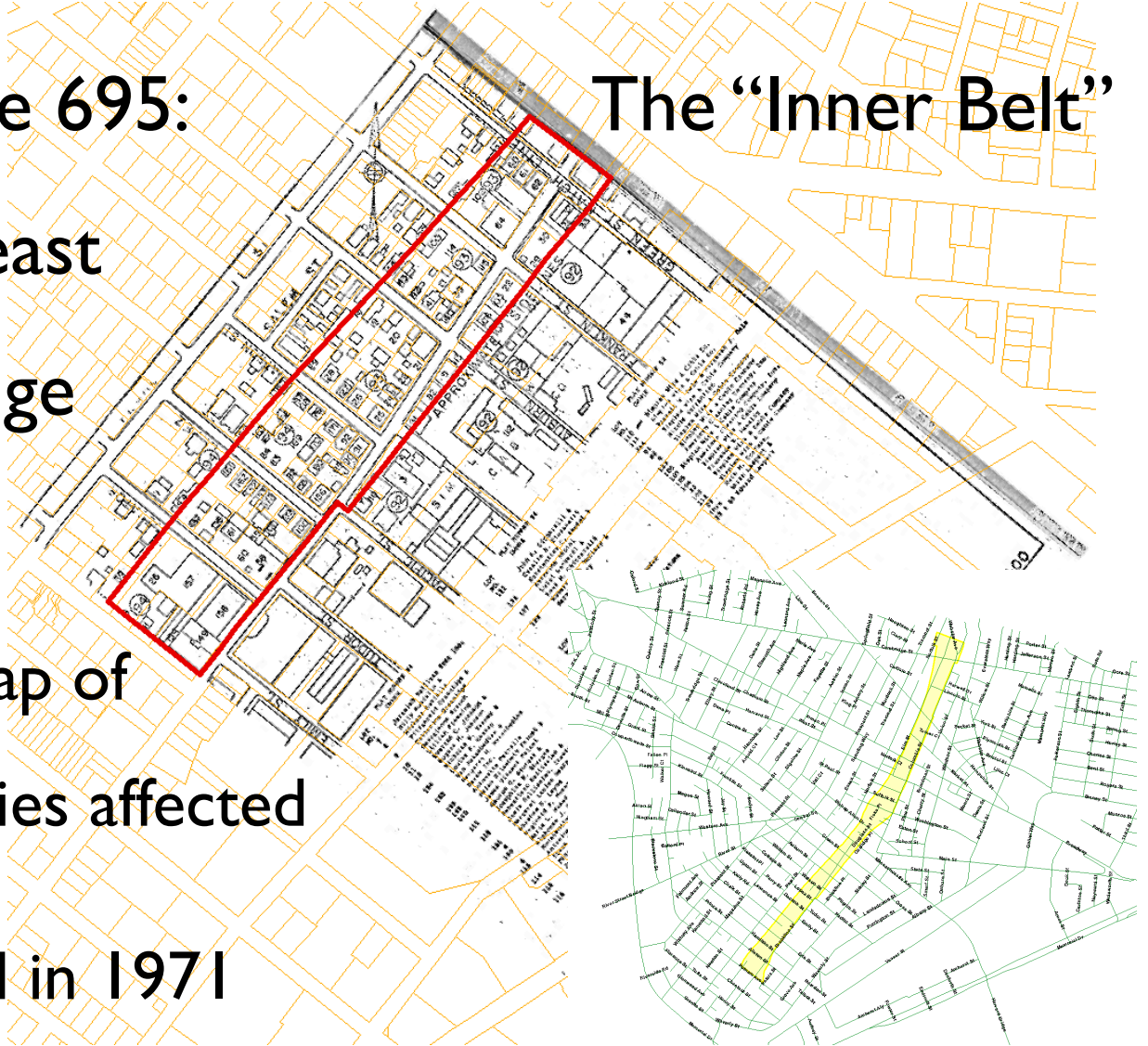


Cities, Schools, and Space



Extracting Map Features

- Interstate 695: *through east Cambridge*
The “Inner Belt”
- 1967 map of properties affected
- Stopped in 1971



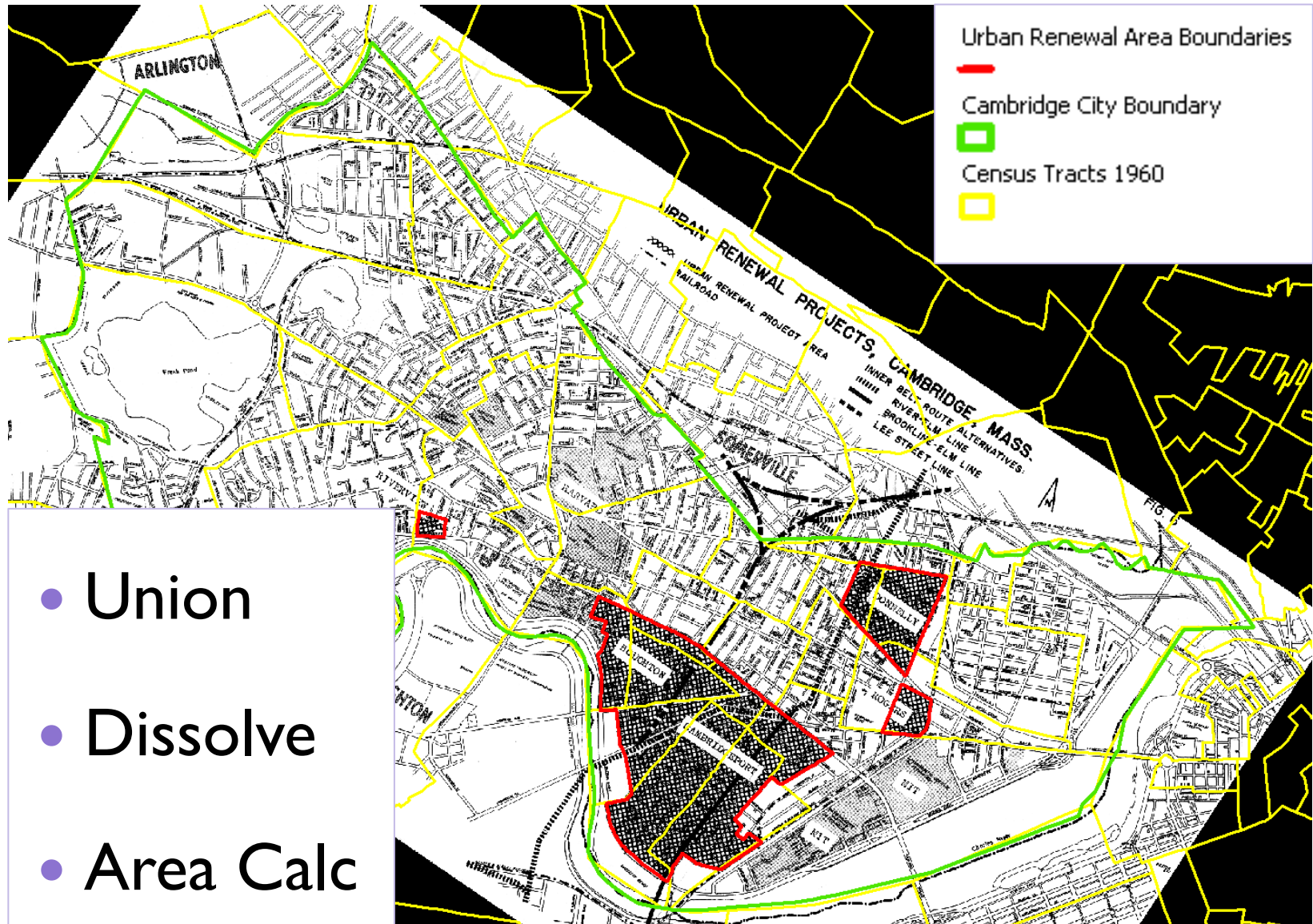
Cities, Schools, and Space



Parcel	Owner	Census_Name	Address	Home	Relation	Sex	ColorRace	Age	Birthplace	FatherBP	MotherBP	Language
89-65	Opella Dumas											
89-66	Thomas J. Cardullo & Alice A. Cardullo	Thomas Cardullo	216 Washington St	R	Head	M	W	35	Italy	Italy	Italy	Italian
89-67	Teodore K. Johnson, Lillian A. Johnson, Walter K. Johnson, & Helen M. Clark	Anupras Nemeikates	330 Columbia Street	O	Head	M	W	37	Lithuania	Lithuania	Lithuania	Lithuanian
89-7												
89-8												
89-9												
89-10												
89-11												
89-12												
89-13												
89-14	Bartolomew Masse	Lillian Mahon	275 River Street	R	Wife	F	N	43	Barbados	Barbados	Barbados	English
89-15	Lillian A. Mahon	Lillian Mahon	275 River Street	R	Wife	F	N	43	Barbados	Barbados	Barbados	English
89-16	John S. Moseley, James A. Betts, and Athelston I.O. Moseley	James A. Betts	63 Magee Street	R	Son	M	N	14	Massachusetts	Massachusetts	Massachusetts	English
89-17	John S. Moseley, Florence G. Moseley, and Athelston I.O. Moseley	John S. Moseley	235 Western Avenue	R	Head	M	N	37	Barbados	Barbados	Barbados	English
89-18	John S. Moseley, Florence G. Moseley, and Athelston I.O. Moseley											
89-19	Clyde A. Henry & Theresa T. Henry	Alphonso Walcott	15 Douglass Street	R	Head	M	N	42	West Indies	West Indies	West Indies	English
89-20	Alphonso Walcott & Elmira B. Walcott	Joseph Nunziato	50 Howard Street	R	Son	M	W	10	Massachusetts	Italy	Italy	Italian
89-21	Joseph Nunziato, Trustee of Margaret Nunziato Trust	John E Scott	91 Inman Street	R	Brother-in-law	M	N	25	British West Indies	British West Indies	British West Indies	English
89-22	John E. Scott & Edna A. Scott											
89-23	Doris A. Kelley											
89-24	Angela Leonardo	Francis E. Irwin	79 Auburn Street	O	Head	M	W	18	Massachusetts	Massachusetts	England	English
89-25	Catherine T. Ellison & Frances E. Irwin											
89-26	Minna Yogel											
89-27	Roman Catholic Archbishop of Boston Corp. Sole											
89-28	Roman Catholic Archbishop of Boston Corp. Sole											
89-29	Joseph N. Payne & Sola V. Payne											
89-30	Samuel L. Merchant & Althea D. Merchant	Samuel Merchant	11 Worcester St.	O	Son	M	N	19	Massachusetts	Virginia	Canada-English	English
89-31	Samuel L. Merchant & Althea D. Merchant	Samuel Merchant	11 Worcester St.	O	Son	M	N	19	Massachusetts	Virginia	Canada-English	English
89-32	Alfred S. Mahon	Alfred Mahon	275 River Street	R	Son	M	N	5	Massachusetts	Barbados	Barbados	English
89-33	Abbie A. Coleman											
89-34	Rufus Bowen & Martha E. Bowen	Rufus Bowen	20 Soden Street	R	Husband	M	N	33	Barbados	Barbados	Barbados	English
89-35	Sarah A. Bates, Ronald C. Bates, Barbara A. Bates, & Elizabeth F. Bates											
89-36	Della L. Brown											
89-37	Della L. Brown											
89-38	Della Louise Brown											
89-39	Jennie Fieler & Elizabeth Kilpatrick											
89-40	Benjamin Chalfen											
89-41	Mildred Driscoll & Lillian B. Driscoll	Mildred Driscoll	3 Suffolk Street	O	Daughter	F	W	20	Massachusetts	Massachusetts	Massachusetts	English
89-42	Benjamin Chalfen											
89-43	Charles J. Fanning & Mary C. Fanning											
89-44	Mary M. Curtin											
89-45	Richard J. Larkin & Mary J. Larkin	Richard J. Larkin	9 Grenough Avenue	O	Son	M	W	10	Massachusetts	Irish Free State	Sweeden	English
89-46	Antonio Crendone											
89-47	Walter & Mary A.											
89-48	Lester A. Randall & Beatrice G. Randall											
89-49	Josephina Spampinato	Josephine Spampinato	210 Harvard Square	R	Sister in-law	F	W	30	Italy	Italy	Italy	Italian
89-50	Joseph B. Maynard	Joseph Maynard	134 Hampshire St	R	Son	M	W	8	Massachusetts	Massachusetts	Massachusetts	English
89-51	Roman Coffon & Mary E. Coffon	Roman Coffin	266 Windsor Street	R	Husband	M	W	33	Russia	Russia	Russia	Russian
89-52	Edith H.E. Pedro, Helen J. O'Brien, & Rose C. Maraca											
89-53	Anna M. Hunt, Winifred Godfrey, Sarah J. Murphy, M. Lorraine Clifford, & Claire J. Murphy											
89-54	Iva W. Nelson & Elizabeth C. Nelson											
89-55	Murray L. Yogel											
89-56	Murray L. Yogel											
89-57	Murray L. Yogel											
89-58	Fernando J. Monteiro											
89-59	Clara Finstein	Clara Finstein	131 Columbia Street	R	daughter	F	W	33	Massachusetts	Austria	Austria	Yiddish
89-60	Willie Jane Hall & Willie Jane Hall, Trustee for Anthony Wyche & Anthony Wyche	Paul A. Revalson	9 Worcester Street	R	Great nephew	M	N	12	Massachusetts	Massachusetts	Massachusetts	English
89-61	Suzanne R. Greene & Paul A. Revalson	Samuel Merchant	11 Worcester St.	O	Son	M	N	19	Massachusetts	Virginia	Canada-English	English
89-62	Muriel G. Raynor & Samuel L. Merchant											
89-63	Ora H. Jackson & Florence H. Agard											
89-64	Berardino M. Santeusano & Antoinette Santeusano											
89-65	Rose Cohen											
89-66	Mary O. DeGuglielmo	Mary O. DeGuglielmo	793 Cambridge St	O	Wife	F	W	44	Italy	Italy	Italy	Italian
89-67	Mary O. DeGuglielmo	Mary O. DeGuglielmo	793 Cambridge St	O	Wife	F	W	44	Italy	Italy	Italy	Italian
89-68	John E. Aufiero & Gilda C. Aufiero											
89-69	Anthony Colosimo, Elizabeth Colosimo, & Bruno Colosimo	Anthony Colosimo	21 Park Ave	O	Head	M	W	38	Italy	Italy	Italy	Italian

Compare families to the 1930 census!

What Influences Urban Renewal?



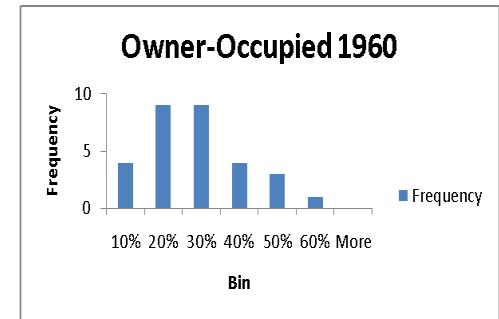
Cities, Schools, and Space



Possible Inputs to Urban Renewal

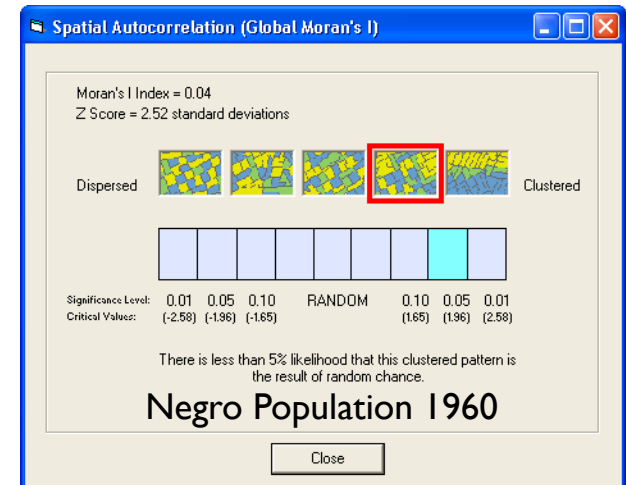
- Data from the 1960 census:

- Older Housing (*Before 1940*)
- Housing Value
- Owner-Occupied Housing
- Negro Population



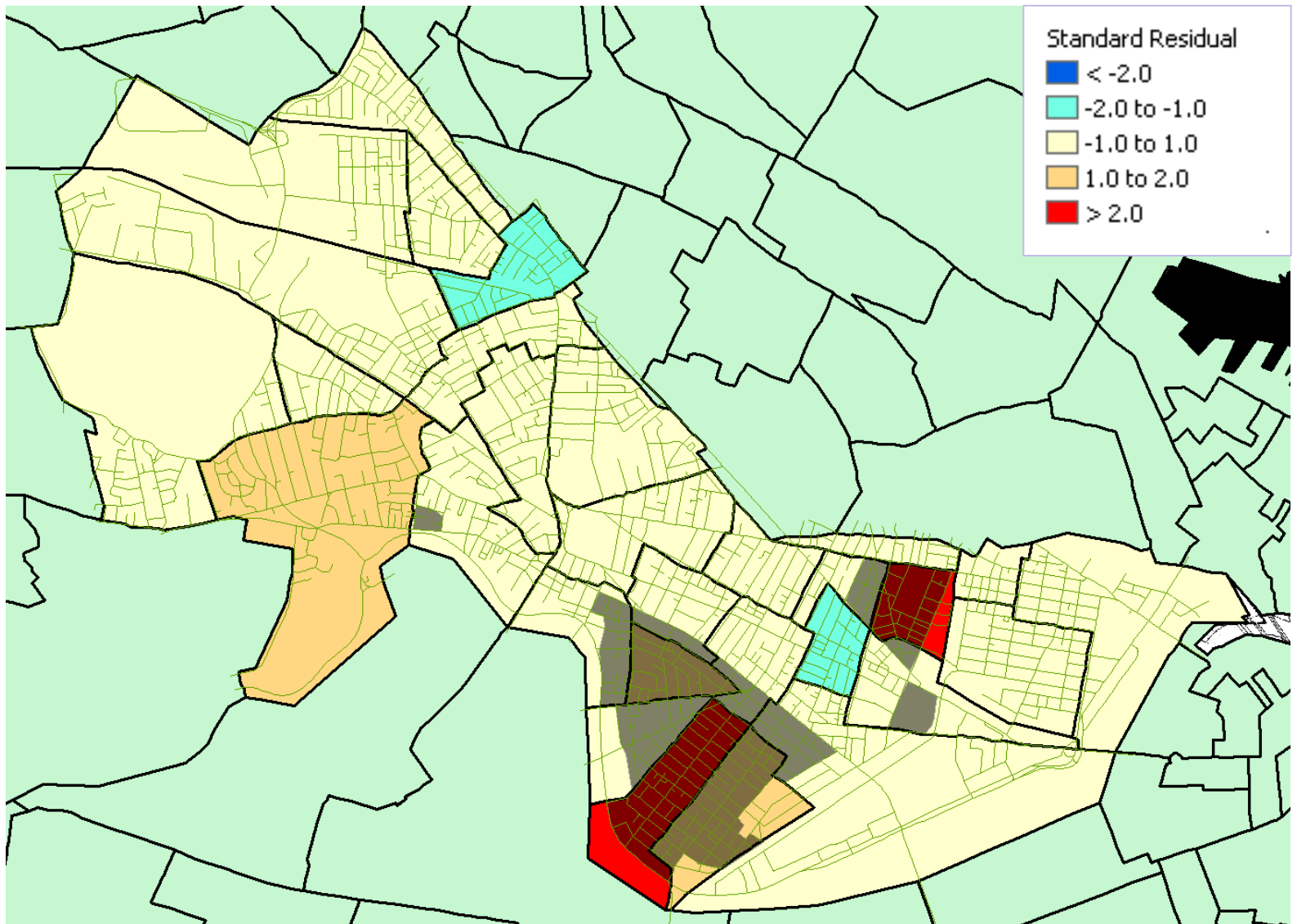
- Data requirements:

- Not cross-correlated: use Excel's *CORREL*
- Spatially auto-correlated: use ArcGIS' *Moran's I*



Geostatistical Analysis

$$\text{UrbanRenewalArea} = \underset{\pm 0.05}{0.13} \text{ Negro} - \underset{\pm 0.05}{0.08} \text{ OwnerOccupied} + \underset{\pm 0.05}{0.05} \text{ Before1940} - \underset{\pm 0.05}{0.03} \text{ HousingValue} + \underset{\pm 0.49}{0.18}$$



Student Final Projects

- 20-30 page paper that must include some GIS, and preferably addresses these questions:
 - How did race, property, and educational opportunity become entangled in Cambridge?
 - Why and how did this community respond?



Cambridgeport School,
Cambridge



Student Final Projects



Peabody School, Cambridge

- MIT, Cambridge, and Urban Development: Examining a Town-Gown Relationship
- The Blinding Powers of Race: An Examination of the Effects of Racial Violence and Local Politics on Cambridge's Pursuit for a Quality Education in Its Secondary Institutions
- Cities, Higher Education Institutions, and Space (and Space): NASA in Kendall Square, Cambridge
- "The Dilemma of Difference": The Bifurcation of Racial and Linguistic Integration and its Effects on Bilingual Education in Cambridge, Massachusetts from 1978-1981

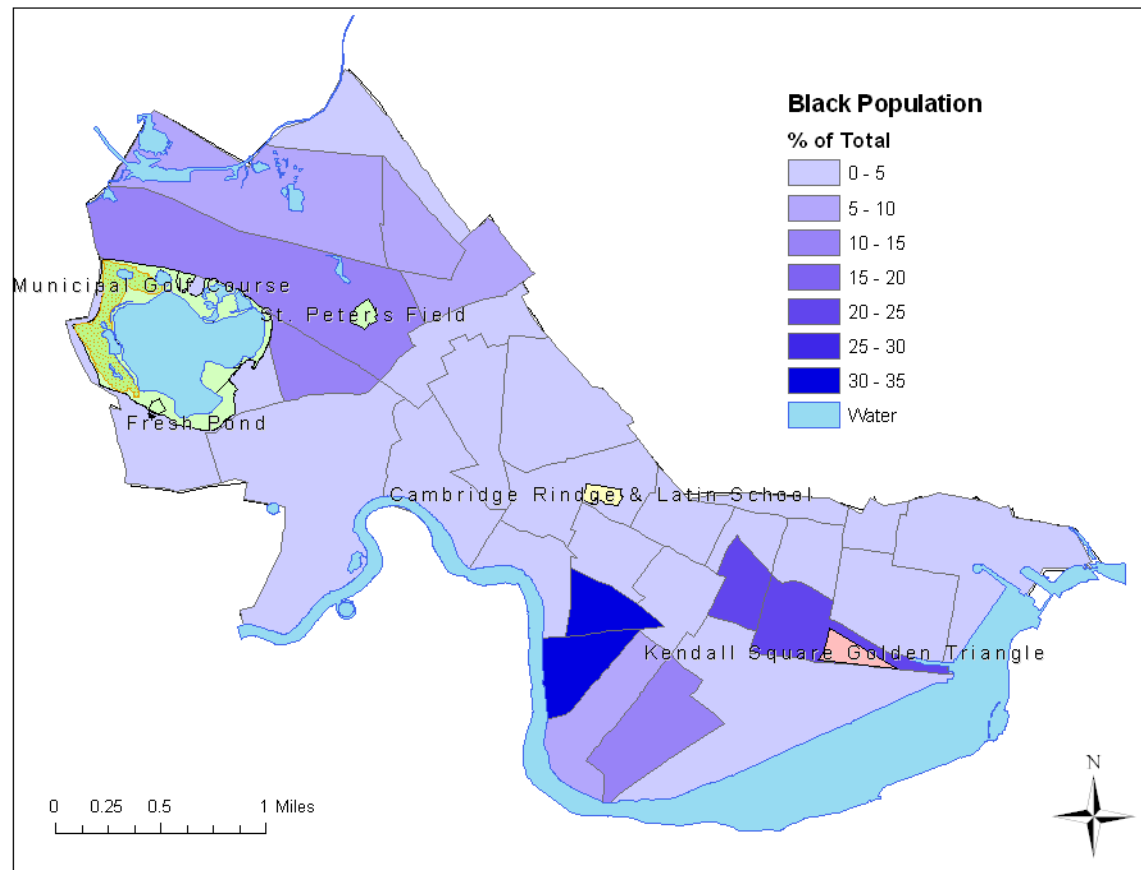
Cities, Schools, and Space



Student Project:

The Merger of Cambridge Rindge and Latin High Schools — Emily Pawlowski

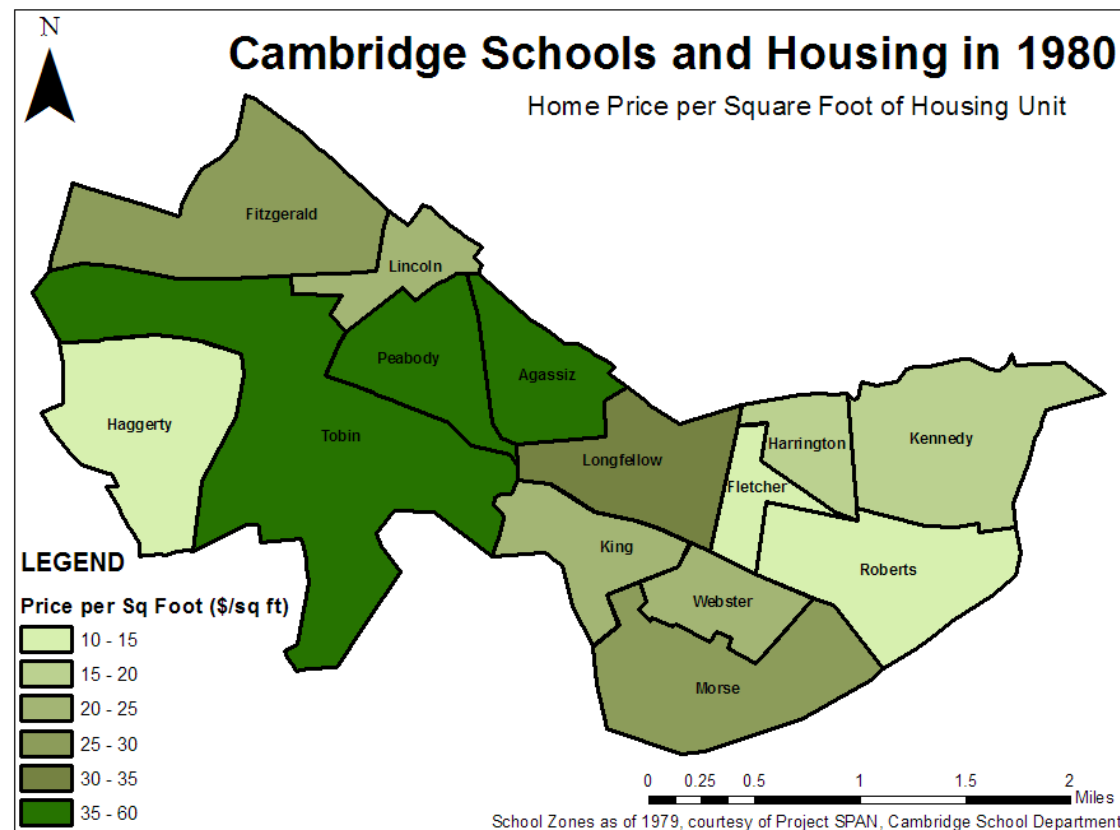
Potential School Locations



Student Project:

Erasing the Lines: The Story of School Choice and Housing in the American City

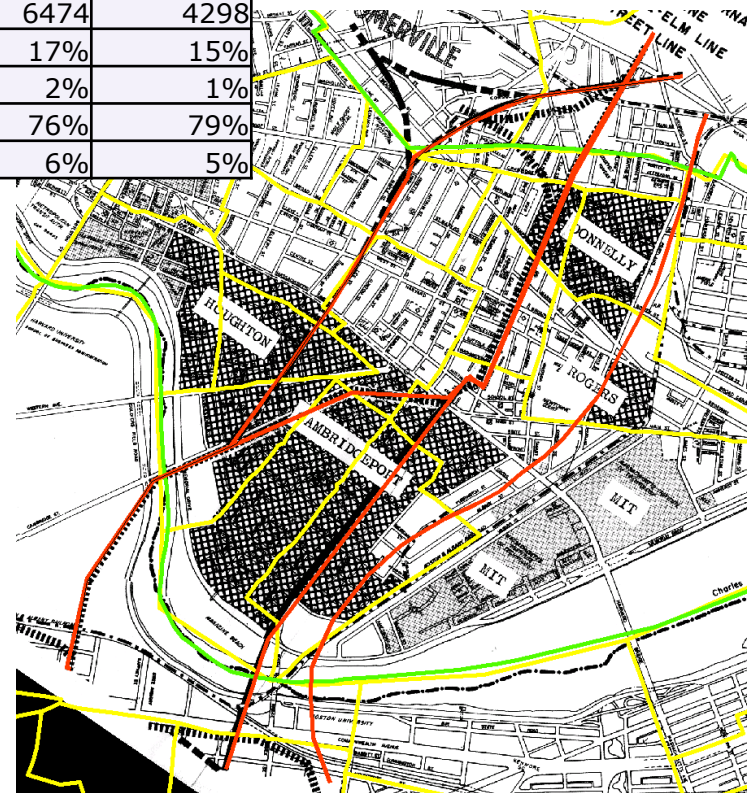
— Daniel Alter



—Yinan Zhang

Inner Belt Highway Alternatives

Cambridge City Boundary
Census Tracts 1960



- Proximity Analysis
 - Tract-based
 - Two characteristics stands out!

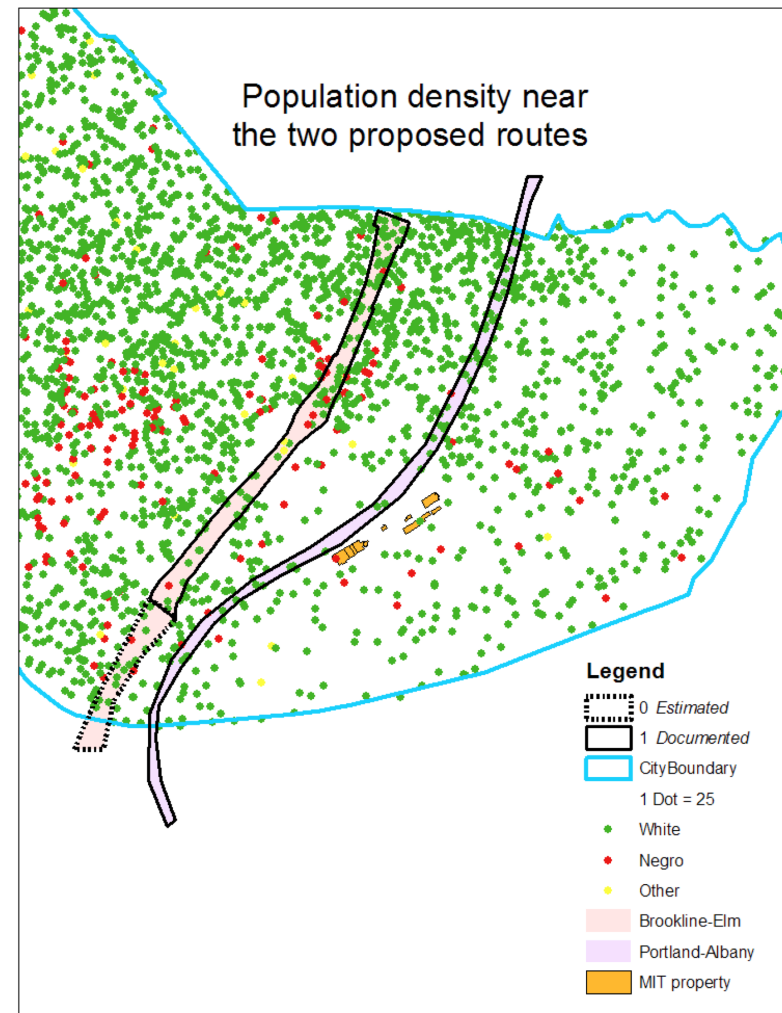
Cities, Schools, and Space



Responding to the Inner Belt Hwy.

—Yinan Zhang

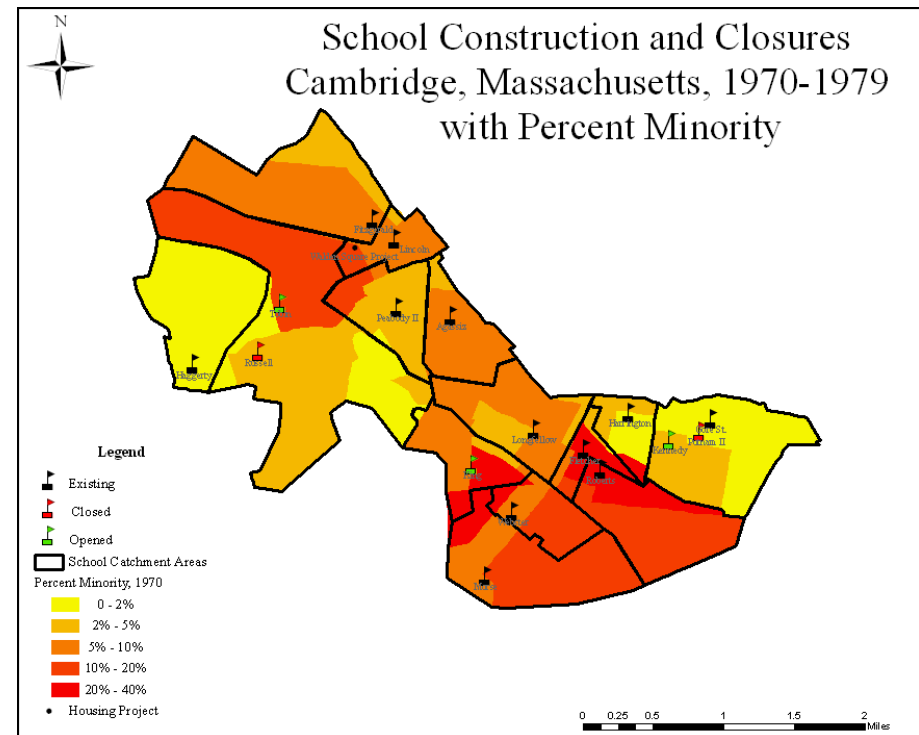
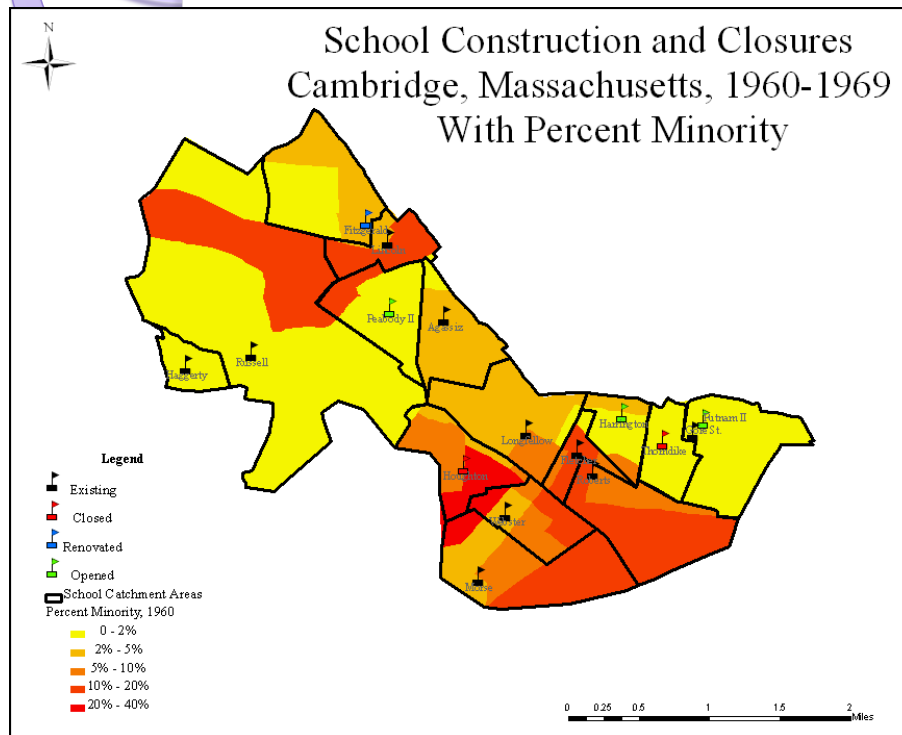
- Final Alternatives:
 - MIT doesn't want the highway adjacent to their campus.
 - The Brookline-Elm neighborhoods don't want it, either!
- End result:
neither is built!



What Influenced School Building?

— Josie Fisher

- During the 1960s and 1970s:



- Six new or reconstructed schools
- But many schools in worse condition!

Cities, Schools, and Space

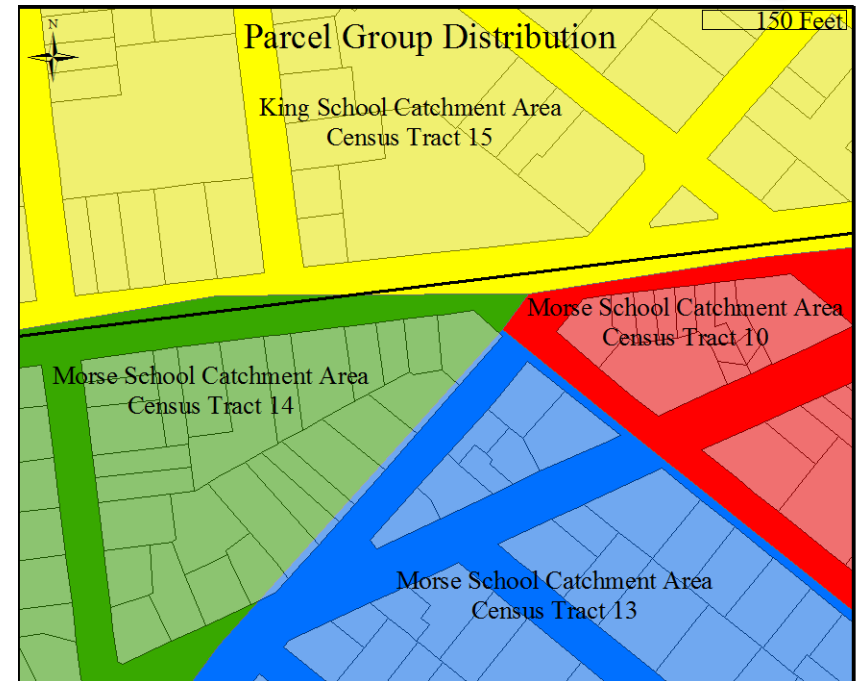


What Influenced School Building?

— Josie Fisher

- Parcel Analysis
 - Distribute census info by housing type on parcels

<u>School District</u>	<u>Minority Reported</u>	<u>Minority from Census Analysis</u>	<u>Difference from Census Analysis</u>
Putnam-Gore St.	0	3	100.00%
Thorndike	0	8	96.05%
Haggerty	5	4	-26.35%
Harrington	47	59	19.54%
Fitzgerald	77	90	14.26%
Longfellow	65	77	15.34%
Agassiz	31	30	-3.63%
Peabody	80	48	-65.68%
Russell	85	125	32.15%
Morse	95	105	9.19%
Fletcher	72	126	43.16%
Lincoln	50	64	21.76%
Roberts	191	74	-157.95%
Webster	152	110	-38.59%
Houghton	273	299	8.78%
<i>Total</i>	<i>1224</i>	<i>1222</i>	<i>-0.14%</i>



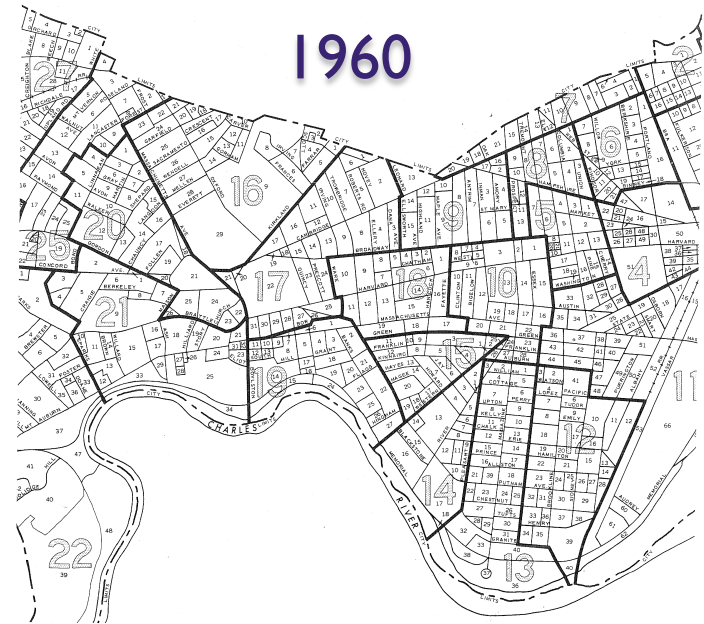
<u>School District</u>	<u>Average Income</u>
Russell	\$14,339.69
Peabody	\$12,250.89
Agassiz	\$10,520.23
Haggerty	\$8,881.98
Lincoln	\$8,714.56
Longfellow	\$8,337.93
Fitzgerald	\$8,211.01
Webster	\$7,613.17
Morse	\$7,460.60
Putnam-Gore St.	\$7,314.95
Roberts	\$7,252.42
Fletcher	\$7,239.24
Harrington	\$6,960.14
Houghton	\$6,959.93
Thorndike	\$6,871.54

Cities, Schools, and Space



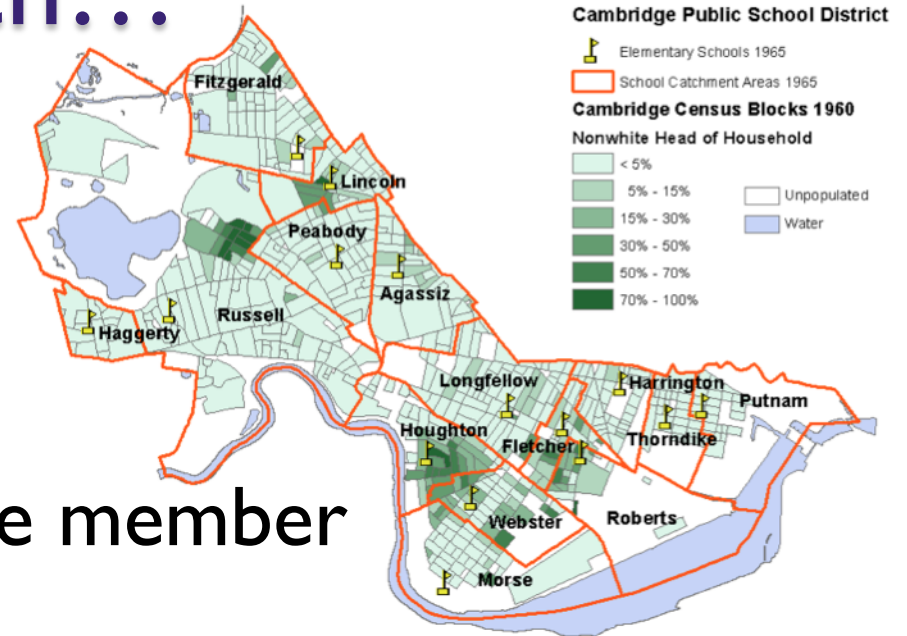
Current Work

- New Discovery:
Some block-level
data — basic
demographics and housing — available
for earlier decades.
- Active digitization project, led by JF
and YZ.



Future Research...

- Block-level data reveals why one School Committee member made an accusation of *de jure* segregation.
- Peabody & Agassiz: “Academically Talented”, many Harvard-associated families.
- Russell boundary in place since ≤ 1946 .



Thanks!

- Cambridge GIS! Jeff Amero, et al.
- Cambridge Assessor
- Cambridge Historical Society
- MIT Archives
- National Historical GIS @ U. Minn
- Mellon Foundation

