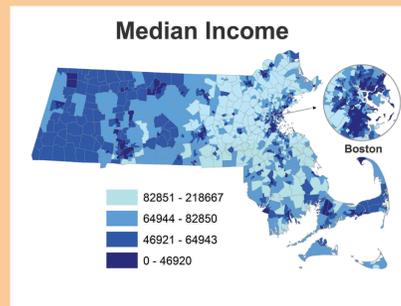


Updating the Massachusetts Environmental Justice Map

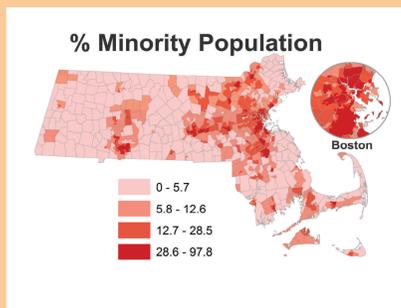
A Project with Alternatives for Community and Environment (ACE)

Ninya Loepky, UEP, December 2012

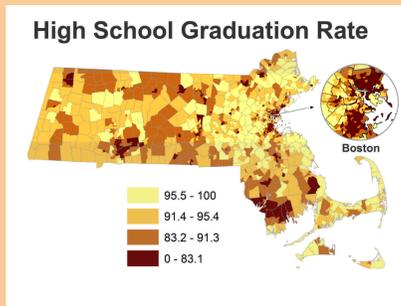
To designate EJ communities, we used



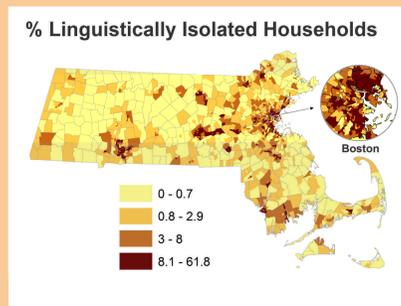
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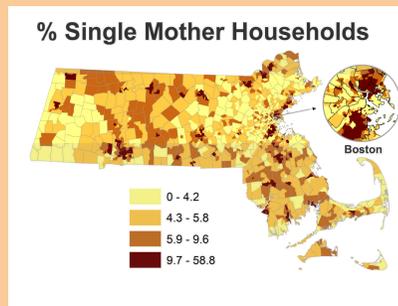
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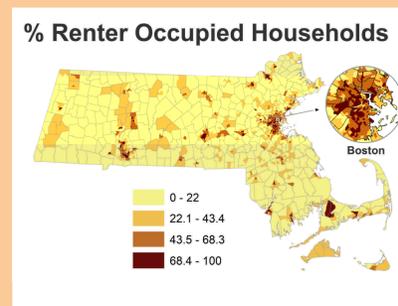
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Introduction

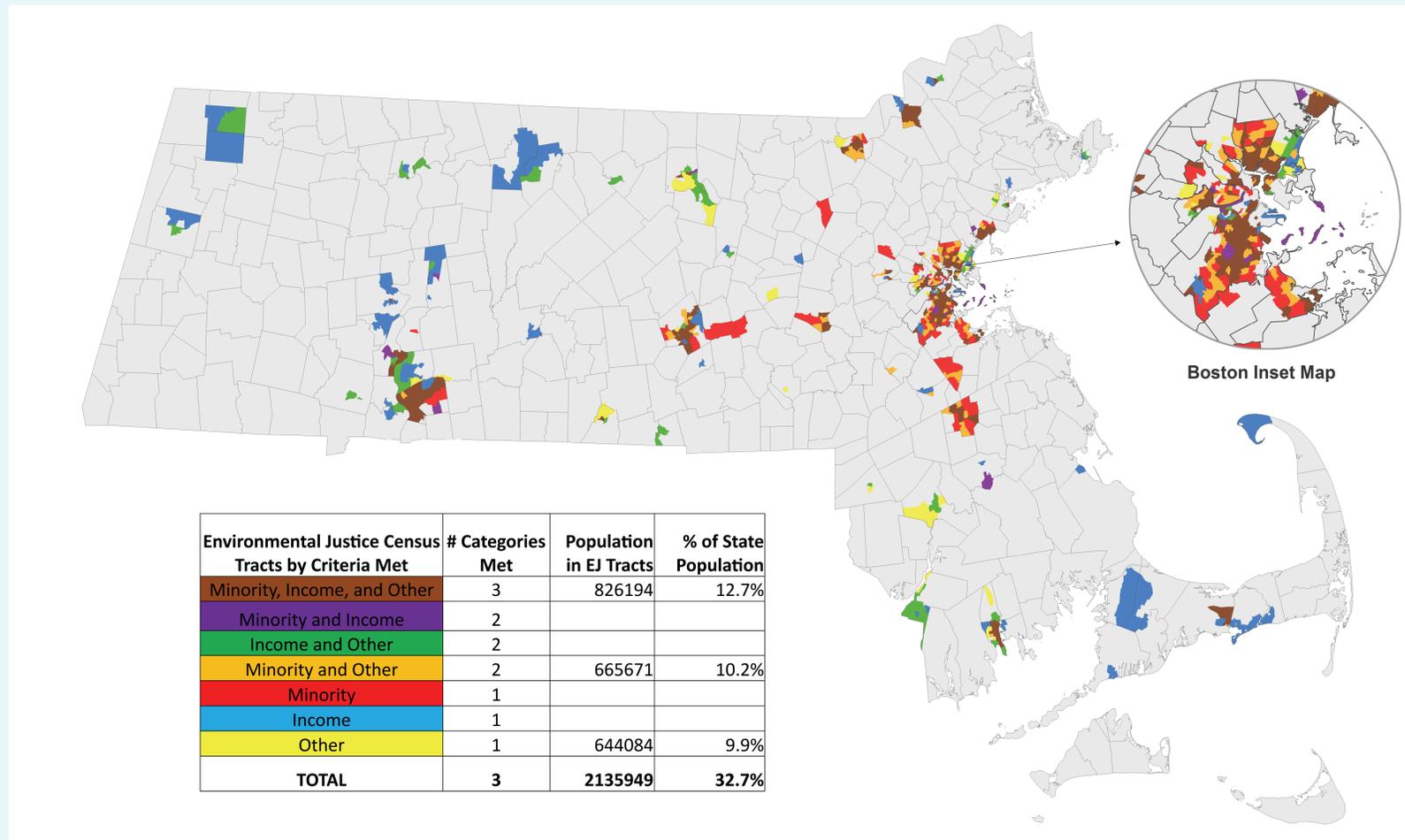
In 2002, the State of Massachusetts adopted an environmental justice (EJ) policy, in which EJ communities were defined as “those most at risk of being unaware of or unable to participate in environmental decision-making or those most unable able to gain access to state environmental resources.”

The state identified four criteria for designating EJ communities: median household income; percent minority population; percent foreign born population, and linguistically isolated households. A map was created of qualifying communities and a commitment was made to update it every ten years.

My partner Ian Jakus and I worked with the environmental justice organization Alternatives for Community and Environment (ACE) in Roxbury, Massachusetts to explore possible changes to the 2002 map for its 10 year anniversary. Their staff lawyer Staci Rubin asked us to investigate how census data collection has changed since 2002 and suggest alternative criteria and thresholds as we saw fit.

Process

Our first step was to understand how census data collection techniques have changed since the first EJ map was created in 2002. Three of the four EJ criteria used then were gathered from the 2000 census’ “long form,” which asked households more detailed questions and was discontinued in 2010. It was replaced by the American Community Survey, which samples fewer households on an ongoing basis instead of every ten years and often has a higher margin of error. After exploring possible categories to use in an updated map, we chose the following:



Environmental Justice Census Tracts by Criteria Met	# Categories Met	Population in EJ Tracts	% of State Population
Minority, Income, and Other	3	826194	12.7%
Minority and Income	2		
Income and Other	2		
Minority and Other	2	665671	10.2%
Minority	1		
Income	1		
Other	1	644084	9.9%
TOTAL	3	2135949	32.7%

Name of Category	Definition	Quantile Threshold	Number of Qualifying Tracts	Percent of Total MA
Minority	% population that identifies their race(s) as other than 'white alone'	28.5% or more	369	25.0%
Income	Median income in the last 12 months (2010 inflation-adjusted dollars)	\$46,920 or less	369	25.0%
Single Mothers	Family households with one or more people under 18, with female householder and no husband present	9.6% or more	371	25.2%
Educational	Population 25 years or older with high school diploma	83.1% or less	371	25.2%
Renters	Percent of renter occupied housing units	56.3% or more	368	25.0%
Language Isolation	Households in which no one age 14 and over speaks English only or speaks English 'very well'	8.0% or more	366	24.8%

A tract needed to meet minority, income, or 2 of the 4 other criteria to qualify.

Our next step was to decide how to classify the criteria and designate EJ thresholds. We decided quantiles were the best classification method. Because each quantile has an equal number of data points, it is arguably more objective, and the maps we made with quantiles showed clustering we did not see when we used the State’s seemingly arbitrary cutoff values from 2002.

Next, we selected which census tracts qualified as “EJ” for each criteria and coded them numerically in our attribute table. By summing and querying these new fields, we were able to make a list of which criteria each census tract met, and how many total criteria each EJ tract met.

Results and Conclusions

Overall, we found that 539 of Massachusetts’ 1474 census tracts met one or more of the EJ criteria. This represents 36.6% of the states’ census tracts and

32.7% of the state’s population. Intriguingly, more tracts met all 3 criteria (215) than met only 2 or 1 criteria (162). This indicates there is strong clustering of EJ factors in communities, which is apparent in our map.

In conclusion, we learned that the US Census Bureau is crucial in providing data for policy. The changes that were made in its data collection methods in the past decade make it difficult for state governments to maintain their previous policies without risking data error. Data are incomplete and subject to interpretation, especially when decisions are made about thresholds. A number that might logically “sound good” can sometimes ignore important trends.

In the future, we hope a GIS student or ACE member will map polluting facilities or greenhouse gas emissions over EJ tracts to examine their correlation.

Projection Used:
NAD_1983_StatePlane_Massachusetts_Mainland_FIPS_2001
Data Sources: US Census Short Form 2010 and American Community Survey 5-Year Estimates, 2006-2010

EJ Towns

- Acton
- Adams
- Agawam
- Amherst
- Athol
- Attleboro
- Barnstable
- Beverly
- Boston
- Bourne
- Bridgewater
- Brockton
- Brookline
- Cambridge
- Charlton
- Chicopee
- Clinton
- Dennis
- Easthampton
- Fairhaven
- Fall River
- Falmouth
- Fitchburg
- Framingham
- Gardner
- Gloucester
- Greenfield
- Haverhill
- Holyoke
- Lawrence
- Leominster
- Lexington
- Lowell
- Ludlow
- Lynn
- Malden
- Marlborough
- Mashpee
- Medford
- Methuen
- Milford
- Millbury
- Milton
- Montague
- New Bedford
- North Adams
- Northampton
- Norwood
- Orange
- Peabody
- Pittsfield
- Plymouth
- Provincetown
- Quincy
- Randolph
- Revere
- Salem
- Sandwich
- Shrewsbury
- Somerville
- South Hadley
- Southbridge
- Springfield
- Stoughton
- Stow
- Taunton
- Waltham
- Ware
- Watertown
- Webster
- West Springfield
- Westborough
- Westfield
- Worcester
- Yarmouth