

THE FINANCIAL CONTEXT OF CONSERVATION IN YOUR COMMUNITY

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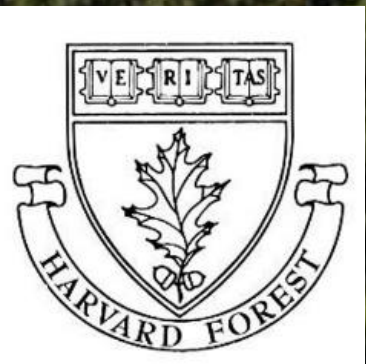
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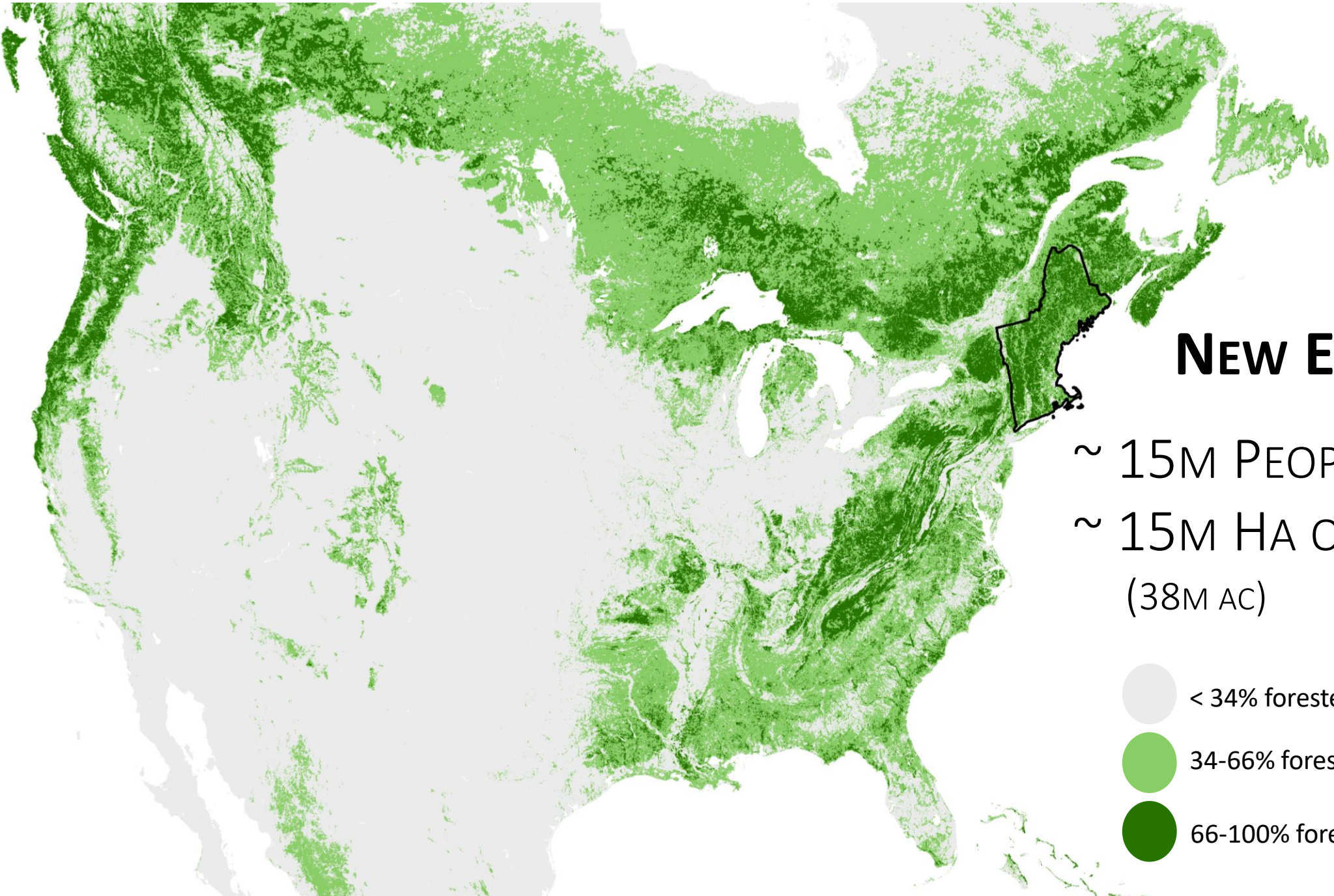


HARVARD UNIVERSITY HARVARD FOREST



RESEARCH PROGRAM IN Ecology








NEW ENGLAND

~ 15M PEOPLE

~ 15M HA OF FOREST
(38M AC)

-  < 34% forested
-  34-66% forested
-  66-100% forested

WHAT IS THE DOMINANT AGENT OF CHANGE IN
MODERN NEW ENGLAND FORESTS?

(HINT: NOT CLIMATE CHANGE)

An aerial photograph of a residential neighborhood. The area is densely packed with green trees, and numerous houses of various colors and styles are scattered throughout. The houses are mostly single-story or two-story structures with different roof colors like grey, brown, and white. The overall scene depicts a suburban or rural residential area with a high density of greenery.

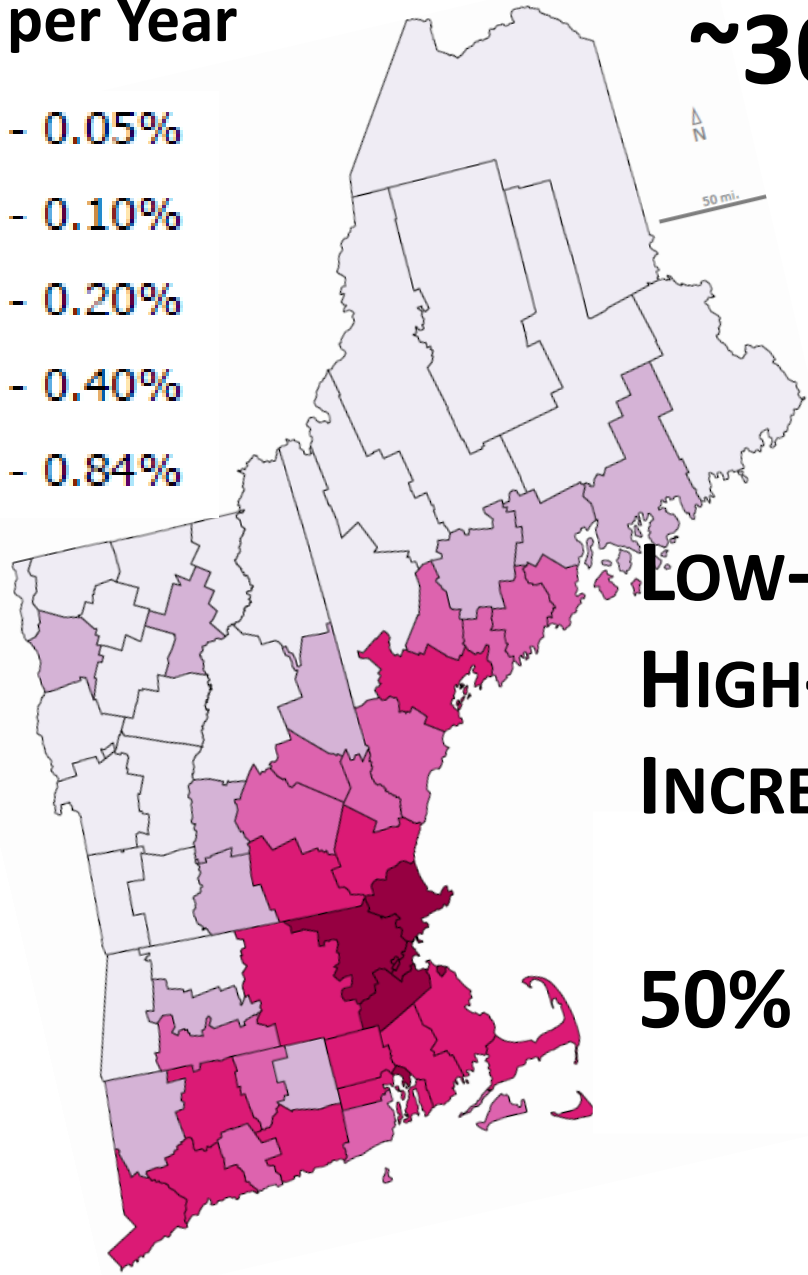
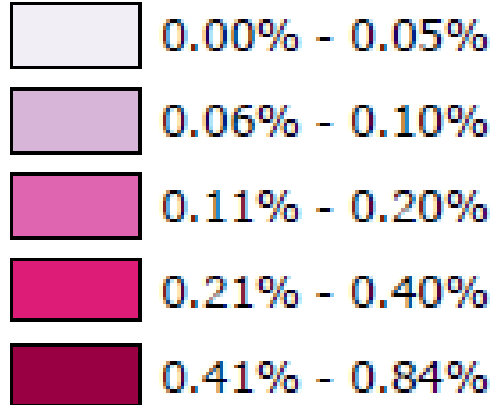
LAND USE

~600,000 LANDOWNERS IN NEW ENGLAND

~200,000 WITH MORE THAN 10 AC



Forest Loss per Year

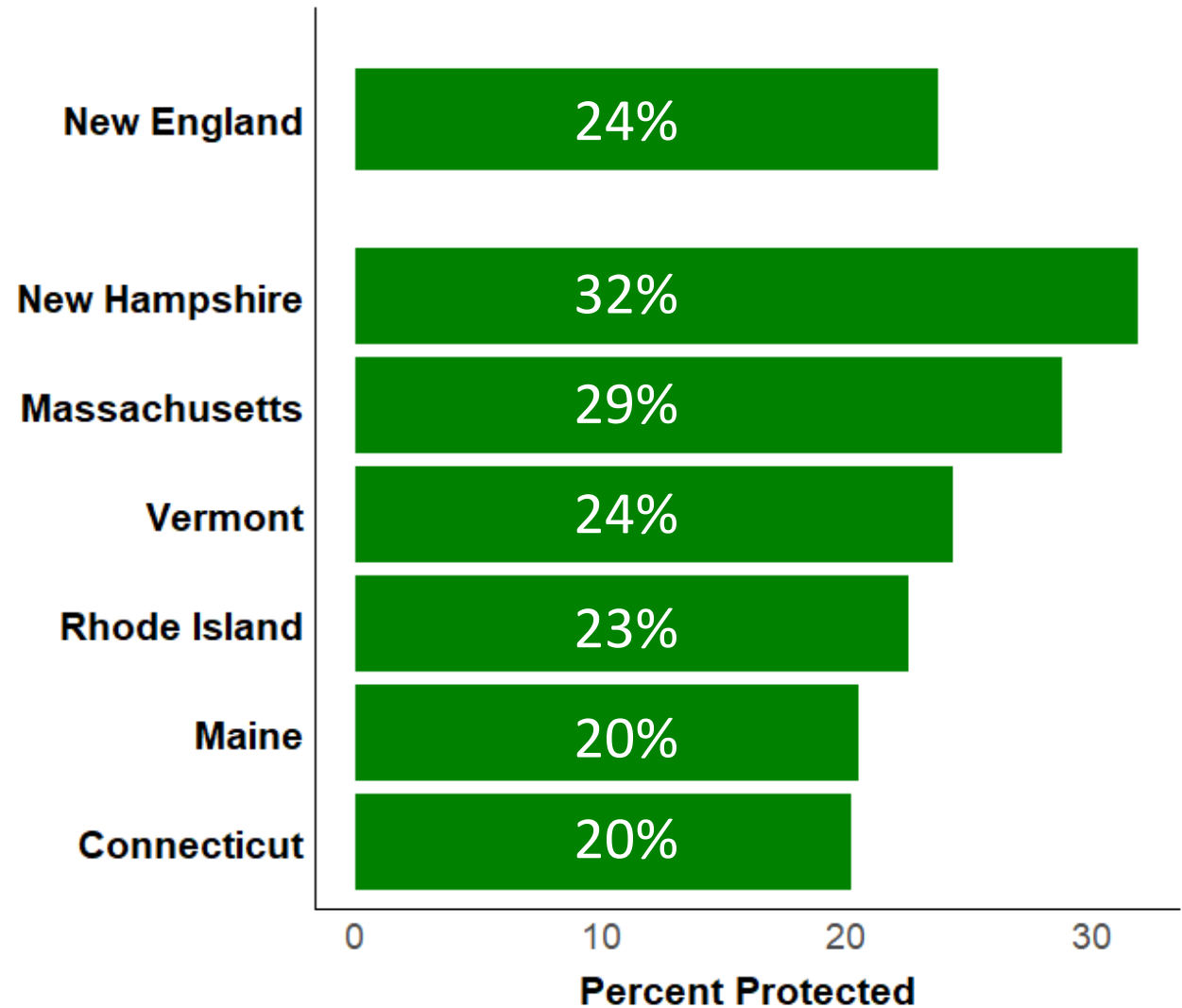
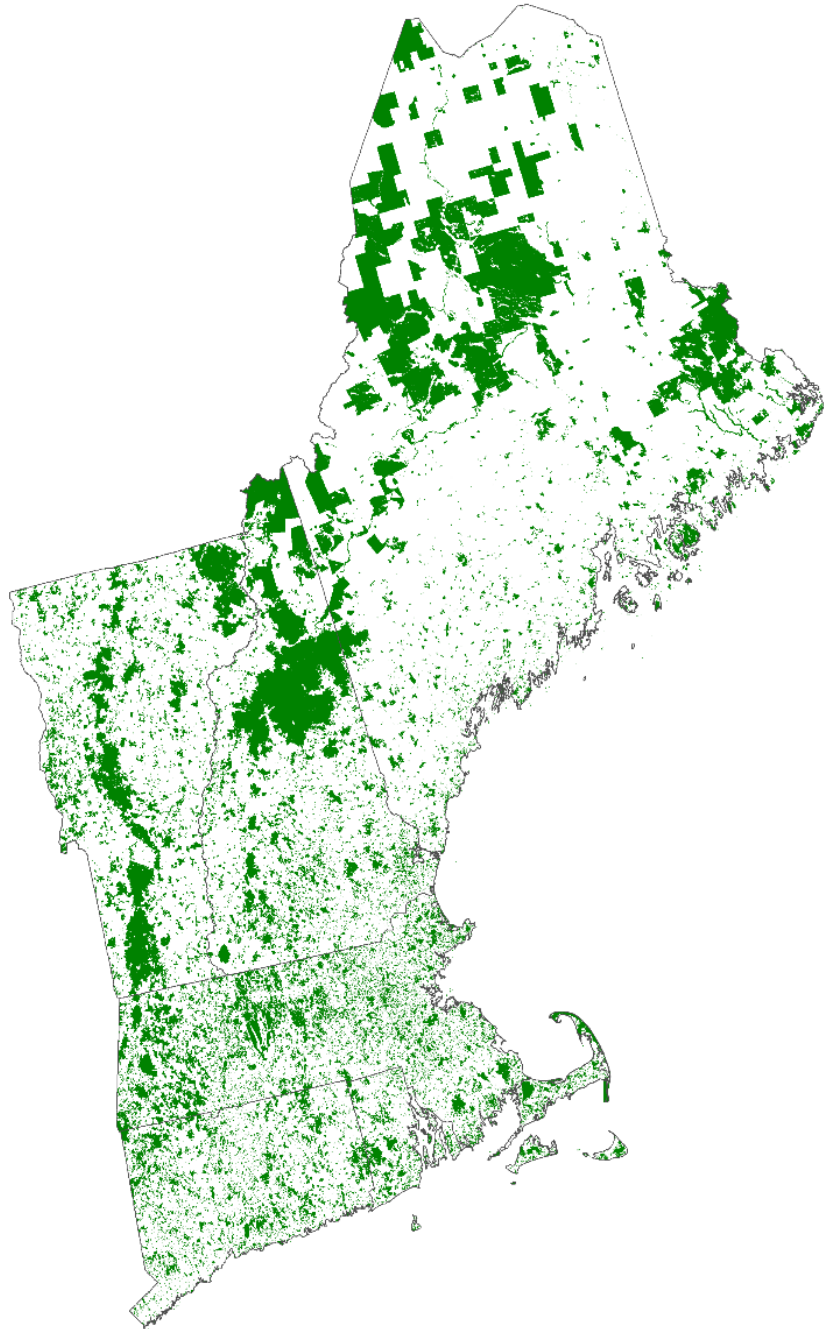


~30,000 ACRES OF FOREST LOST EACH YEAR TO DEVELOPMENT 1990-2020

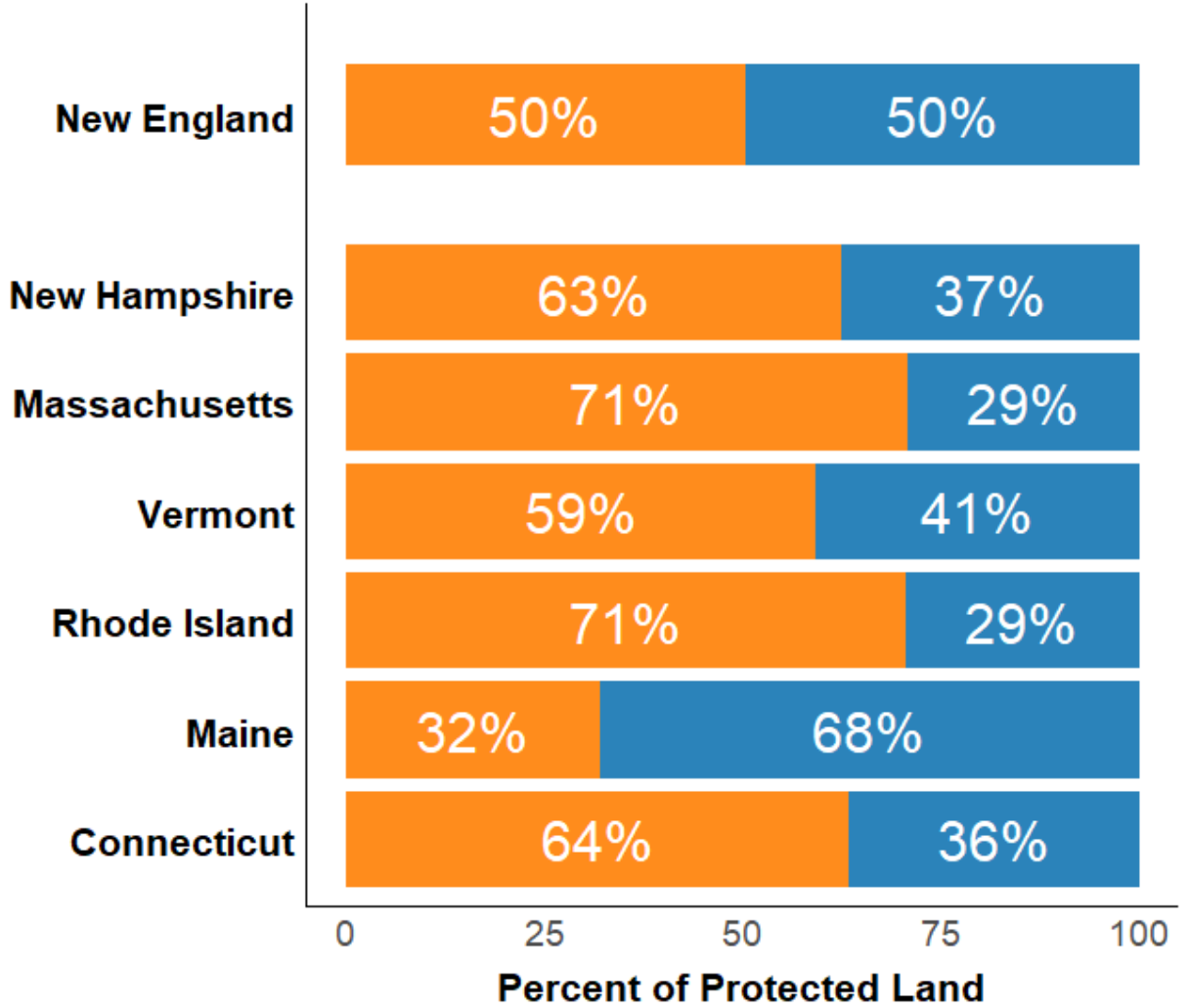
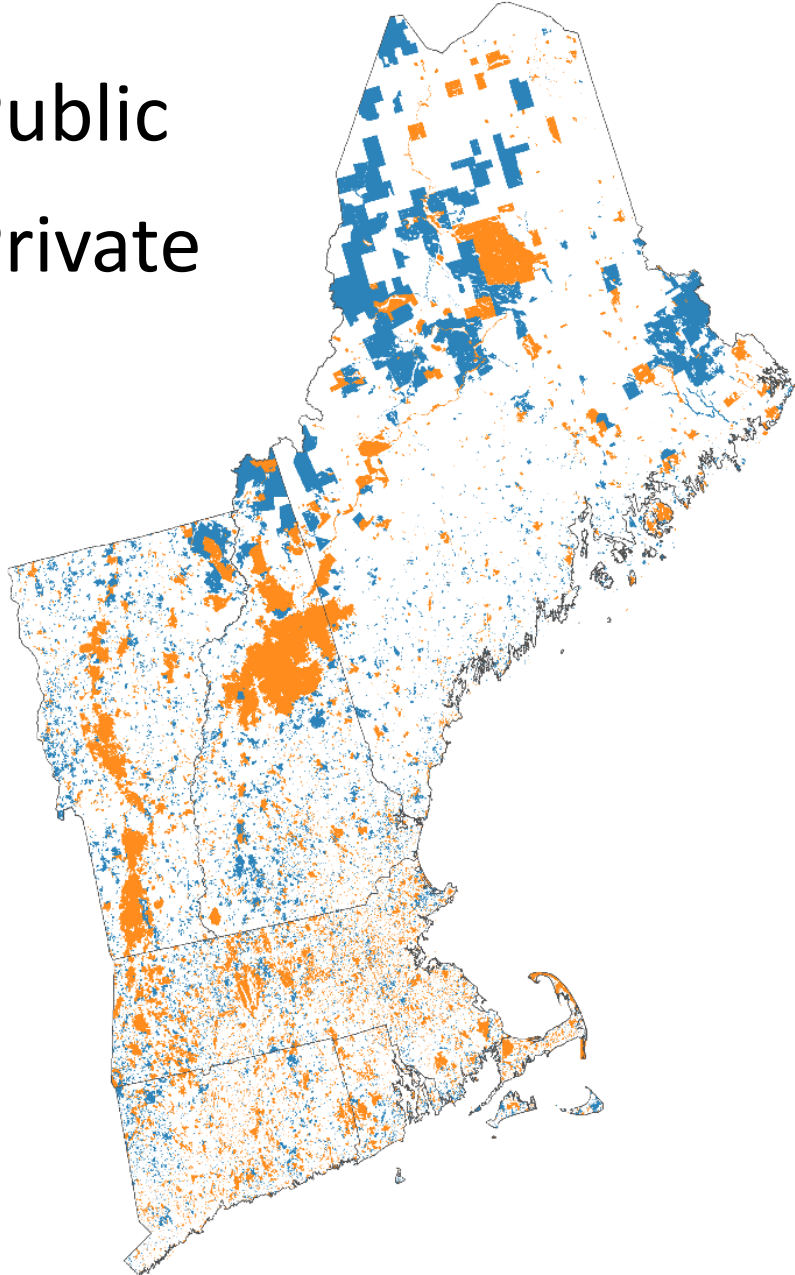
**LOW-DENSITY RESIDENTIAL
HIGH-DENSITY DEVELOPMENT
INCREASINGLY ENERGY DEVELOPMENT**

50% IN MASSACHUSETTS

9,400,000 acres protected from development

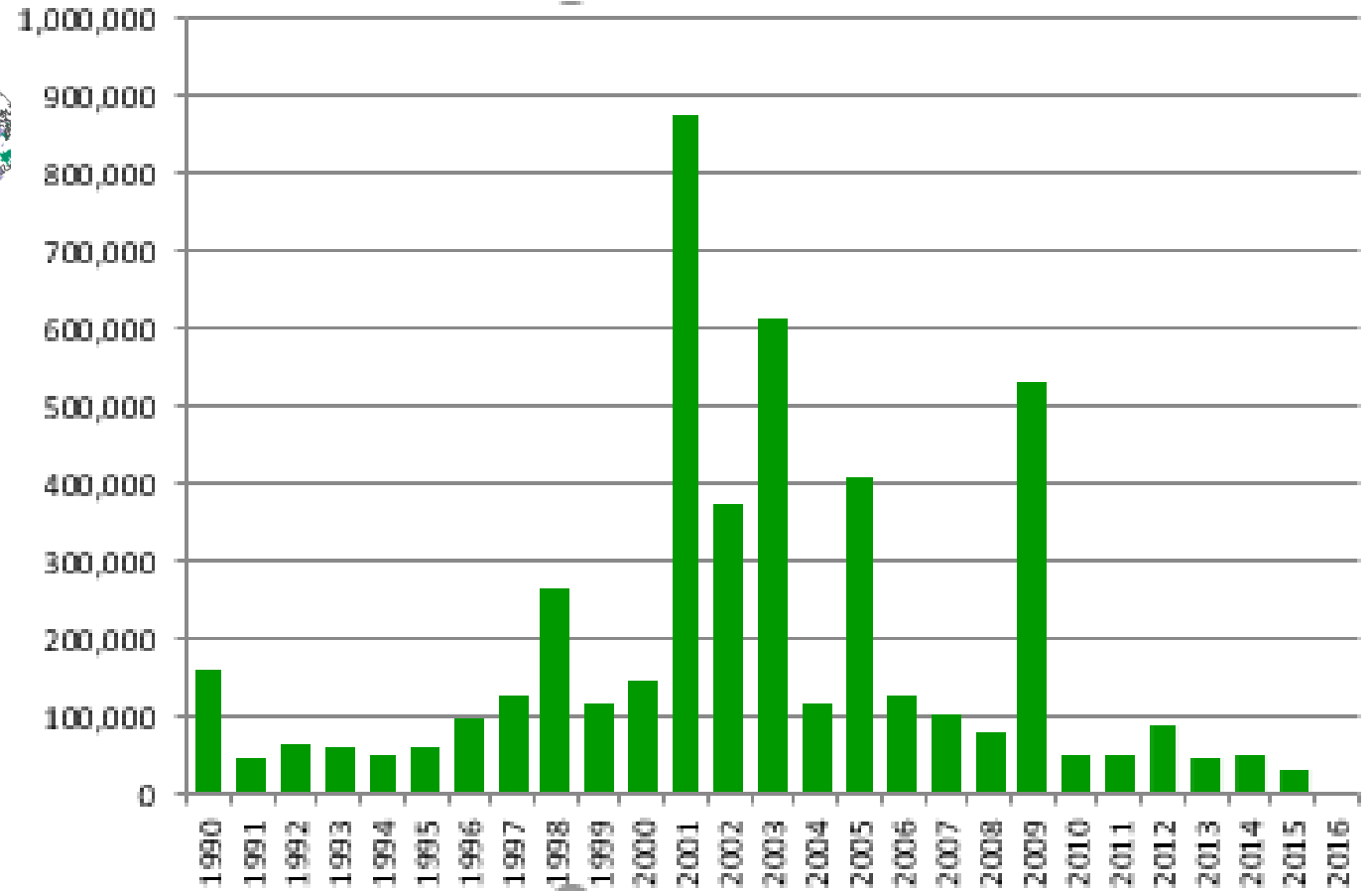
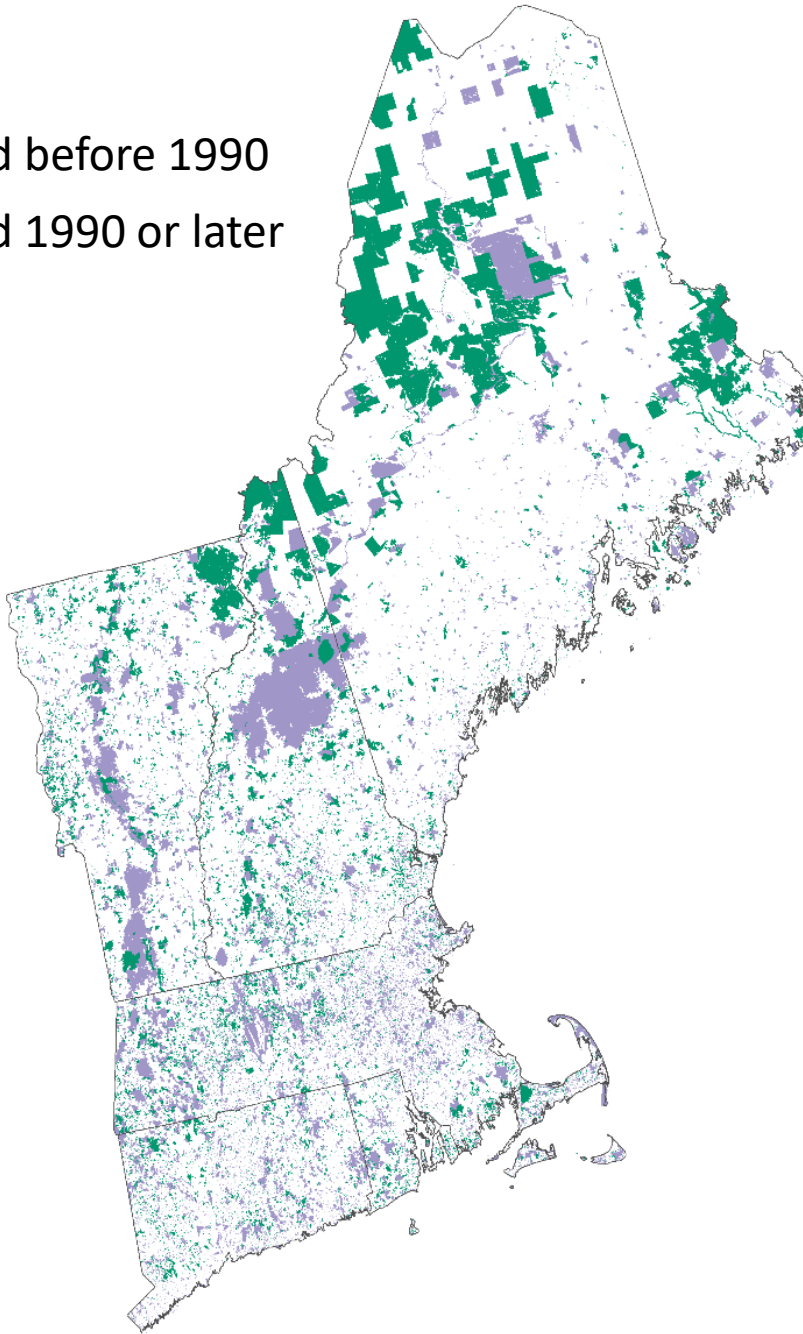


● Public
● Private

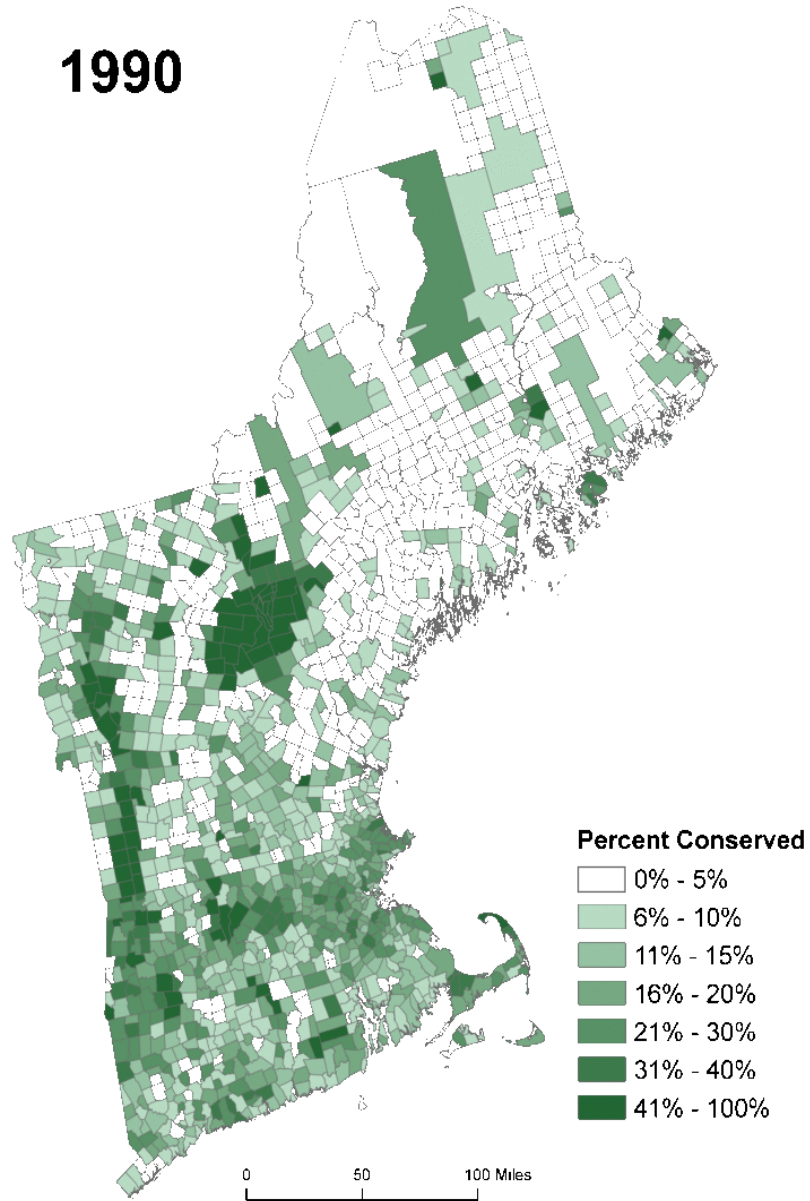


More than half protected since 1990

- Protected before 1990
- Protected 1990 or later

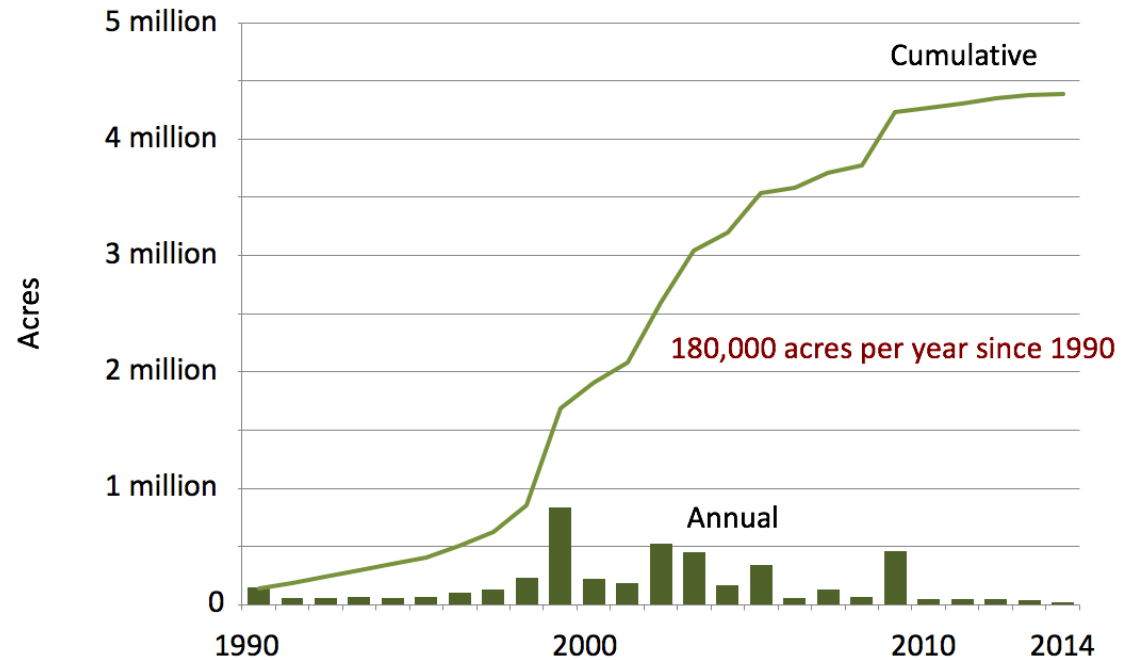


1990



> 4.5 million acres protected
1990-2020

Land Conservation in New England



What does this mean for local economies?

- Clear benefits of land protection, but also costs
- Benefits to many, costs often local

→ Research Question: what are the net local impacts of protection on key economic indicators



Conservation Biology

Contributed Paper

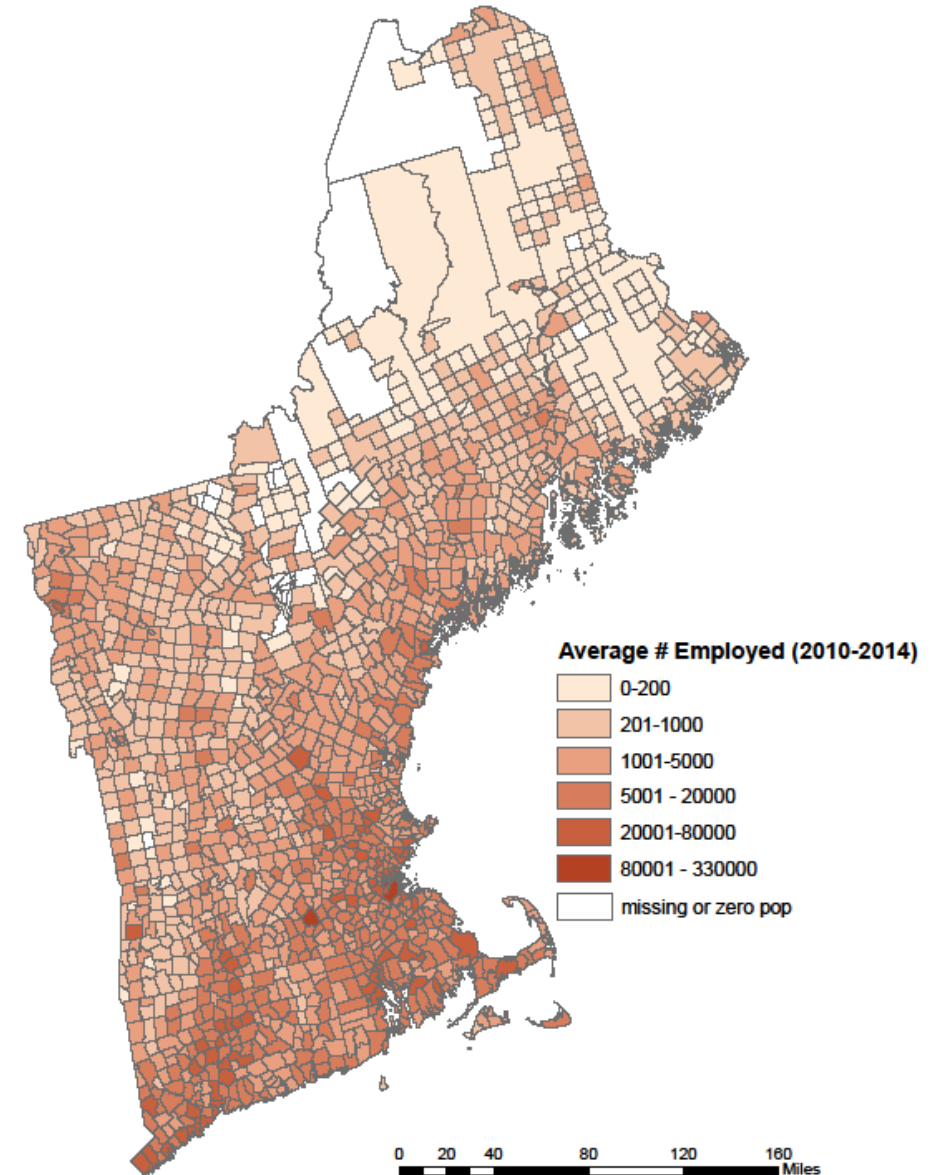
Assessing the local economic impacts of land protection

Katharine R. E. Sims ^{ID},^{1*} Jonathan R. Thompson ^{ID},^{2*} Spencer R. Meyer,³ Christoph Nolte,⁴ and Joshua S. Plisinski²

Local economic indicators: 1990-2015

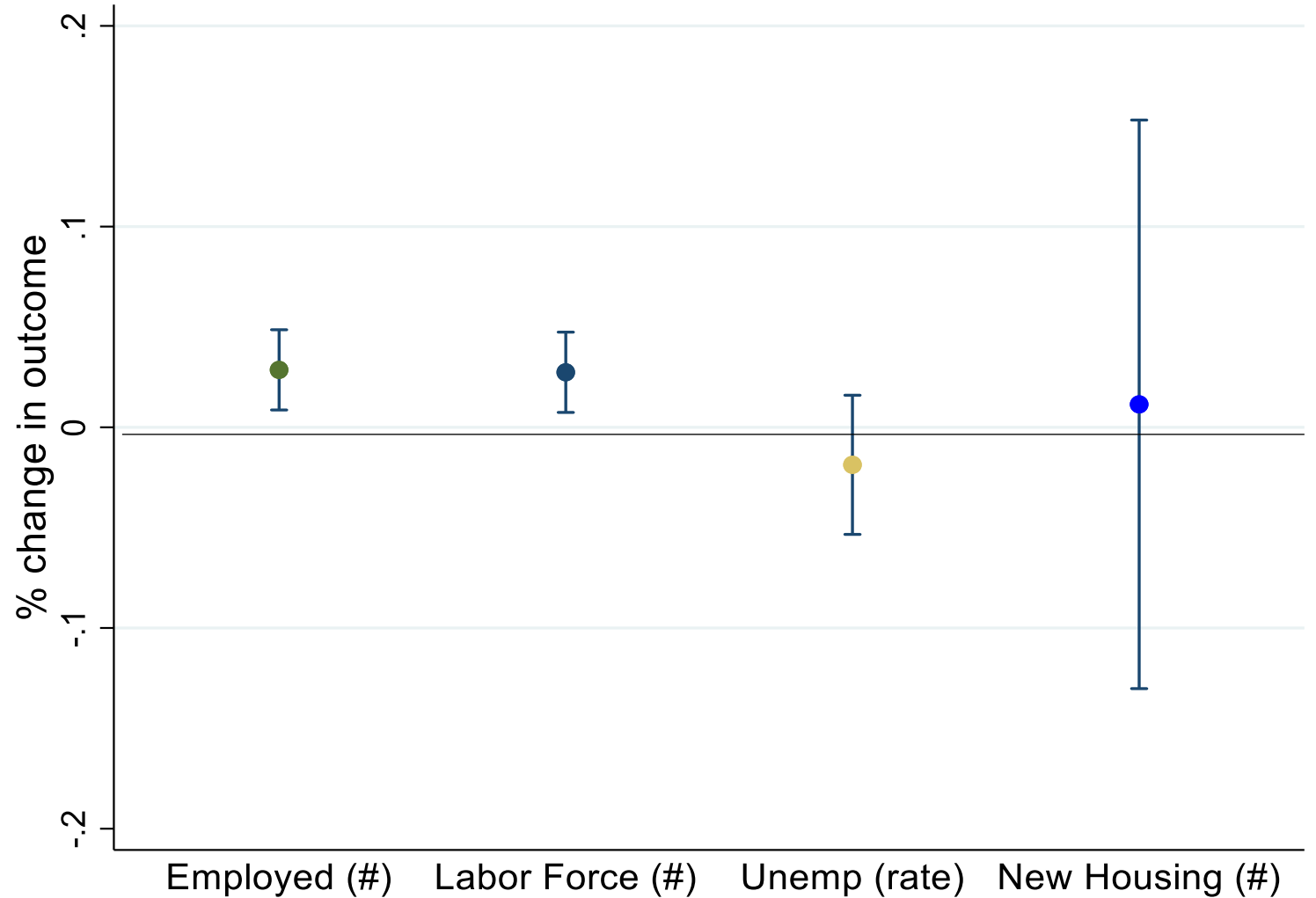
- **Unit of analysis: towns/cities**
- **# people employed, # people in labor force, unemployment rate**
- **# new residential building permits**

Average # employed, 2010-2014 (LAUS)



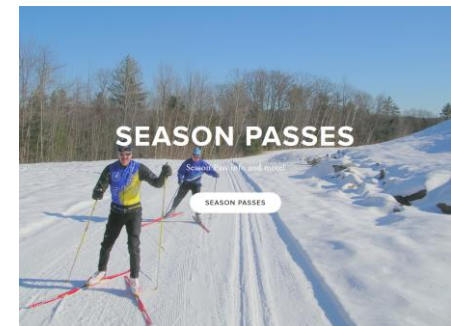
RESULTS

- Employment +
- Labor force: +
- Unemployment: ~
- New housing permits: ~

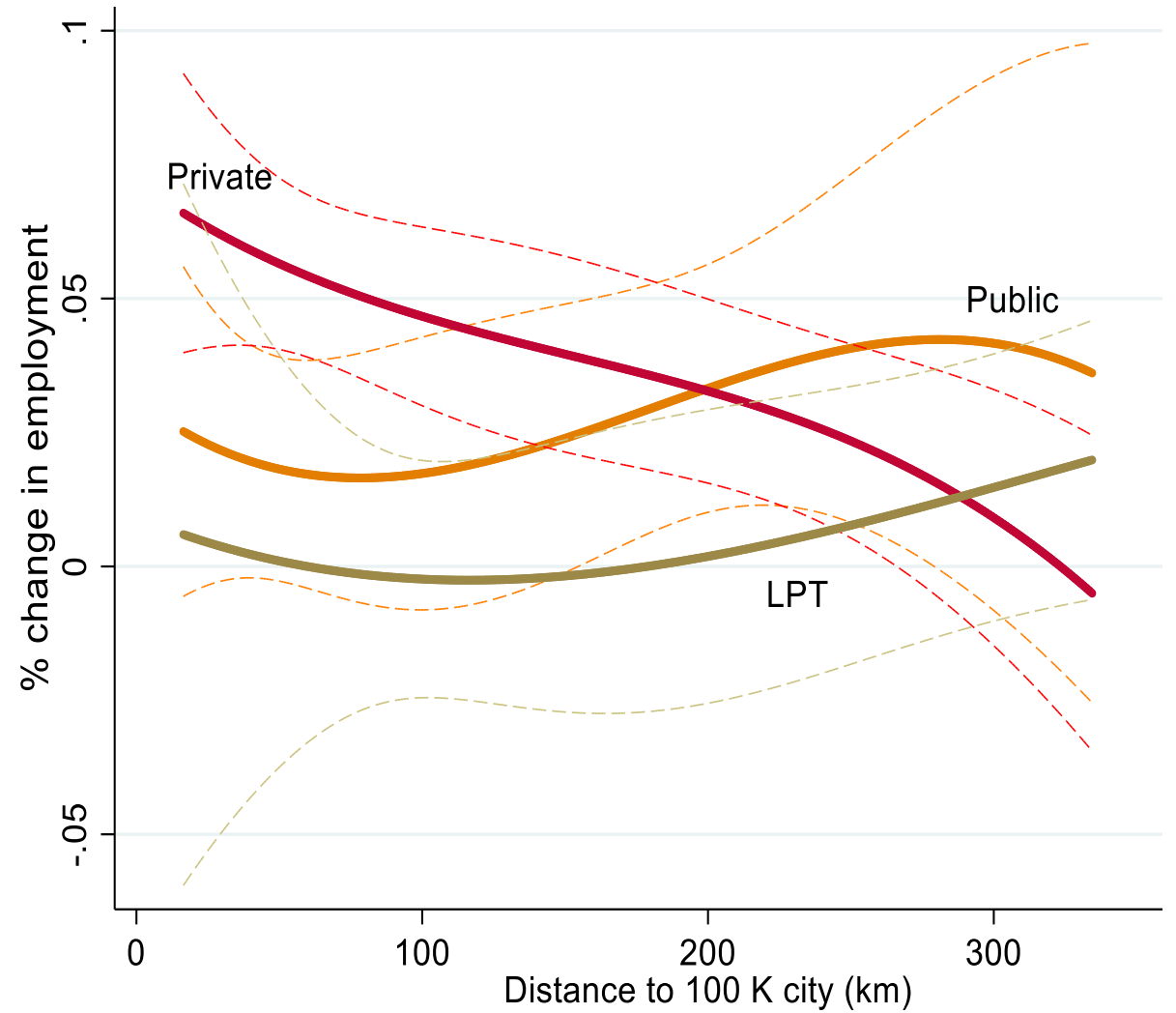


Land Protection → Greater employment

- Impacts on employment are positive but small to moderate
 - E.g.: In a town with 20,000 employed people where the share of protected land increases from 10 to 15% → +1.5% in # employed (or +300 people)
- Why/how?
 - Recreation and tourism: spending on lodging, equipment, guides, etc.
 - Amenity value: draws people and business
 - Resource use: e.g. wood products, maple syrup



Impacts are dependent on the type of protection and the regional context



Does land conservation raise property taxes? Evidence from New England cities and towns

Alexey Kalinin¹, Katharine Sims², Spencer R. Meyer³, Jonathan R. Thompson¹

(1) Harvard Forest (2) Amherst College (3) Highstead Foundation

Mount Grace Webinar: Financial Context of Your Community

February 24, 2022

Why Might Tax Rates Increase?

- Tax Rate = Levy/Tax Base
- Land protection can reduce the local tax base
 - Reduced valuation or removal of protected land from tax rolls
 - Tax burden shift



Concerns About Land Protection



INDEPENDENT. NONPARTISAN.
NONPROFIT. JOURNALISM.



The Trust for Public Land, Knights Pond, Cumberland Center, Maine.

ENVIRONMENT, TRANSPARENCY

With Tax Bases Eroding, Some Rural Communities Say Land Trust Conservation Comes At Their Expense

BY DANIEL NEUMANN | FEB 16, 2018

Having state-owned land can be a taxing experience for small towns



This used to be Middle Road in Dubuque State Forest in Hawley. Tropical Storm Irene washed out portions of the road and one bridge. Recorder Staff/Paul Franz



06:54

A \$173 Tax Bill Is Behind A Big Court Case On Mass. Forests

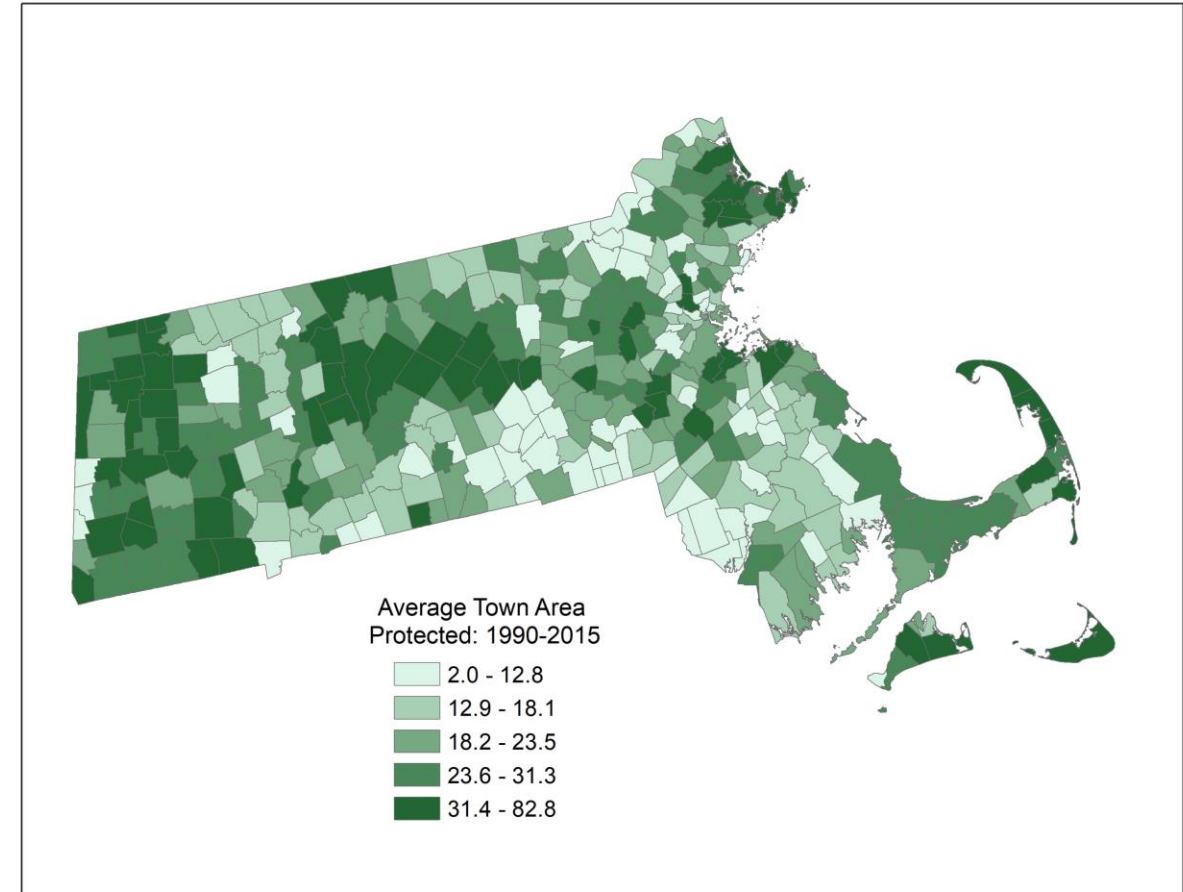
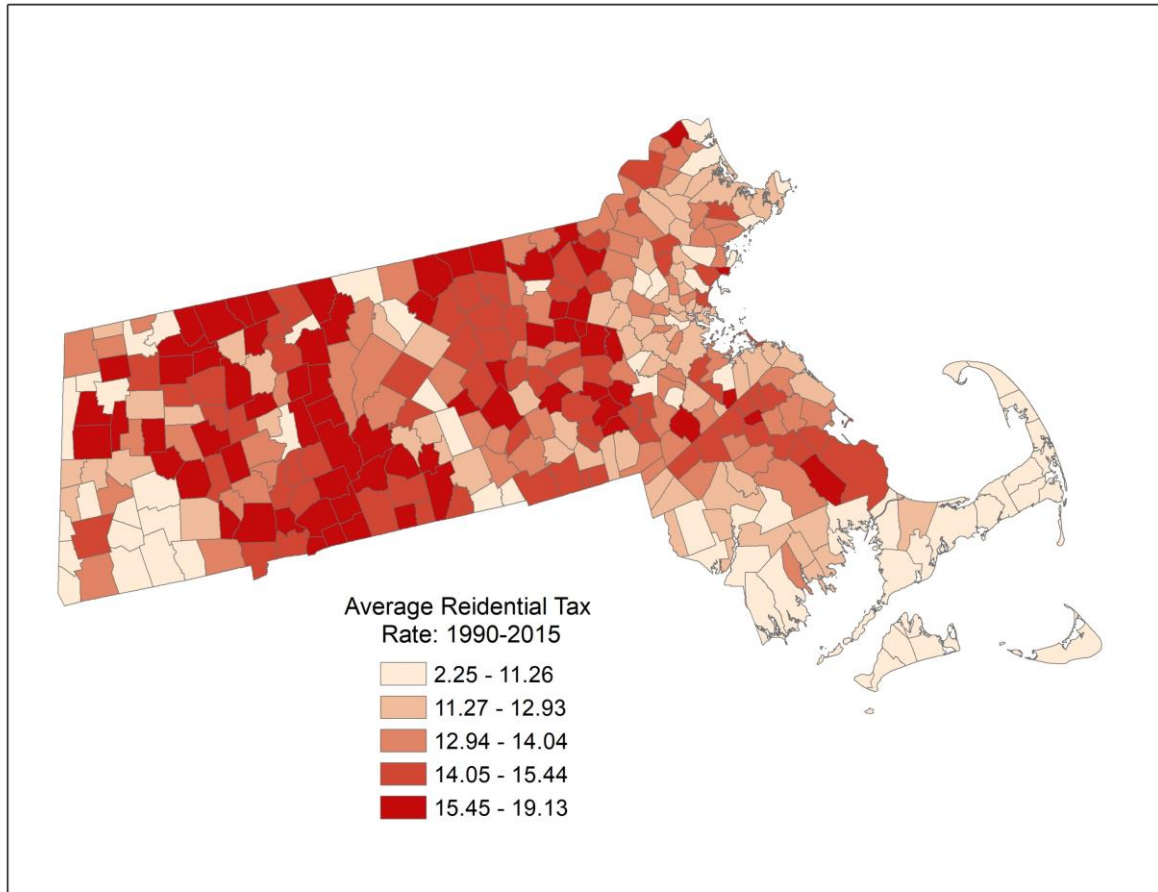
May 02, 2014

By [Bruce Gellerman](#)

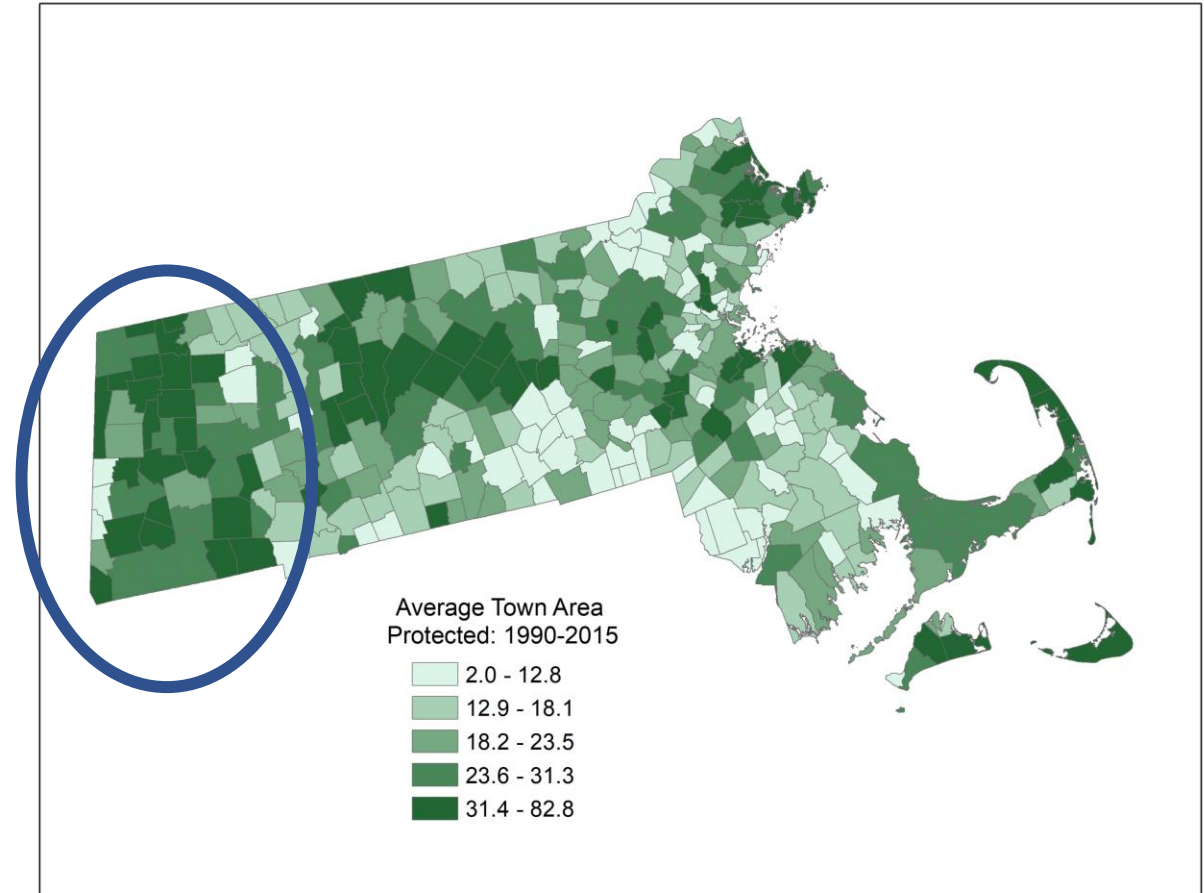
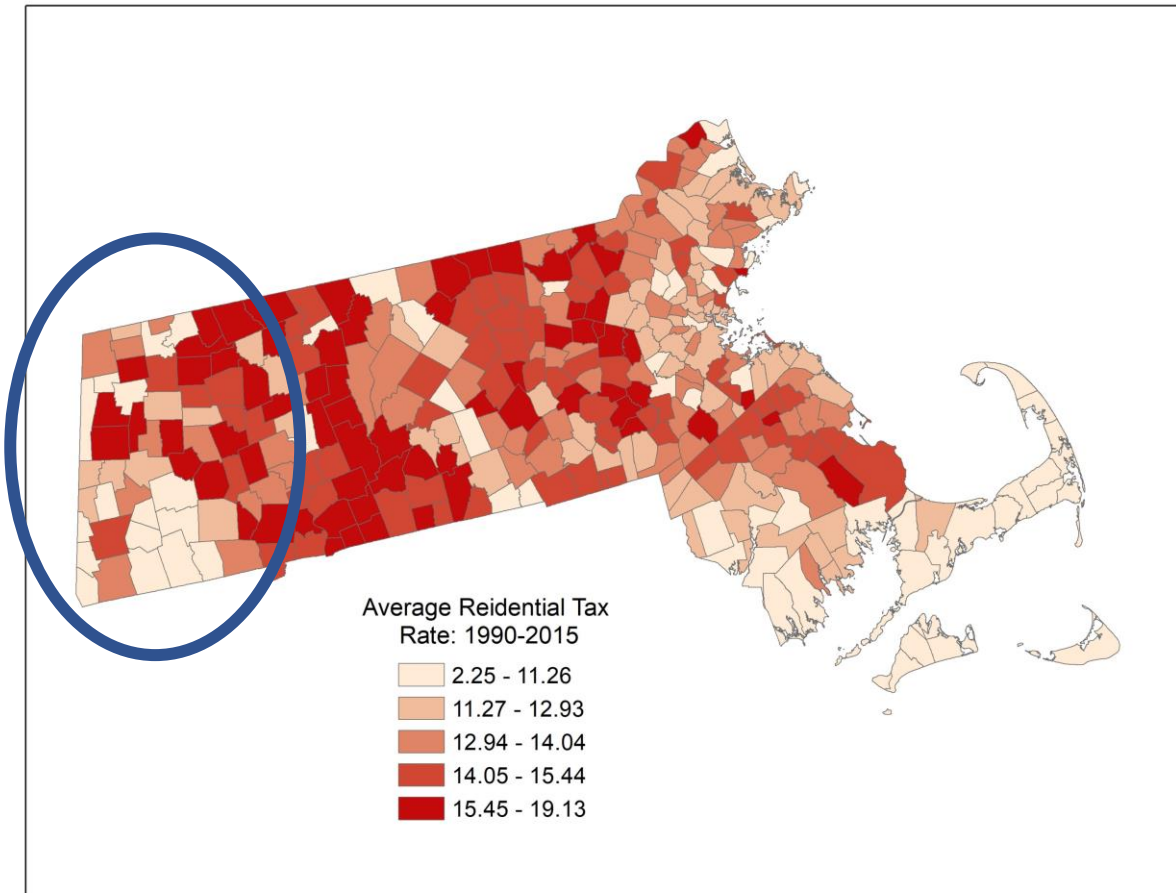


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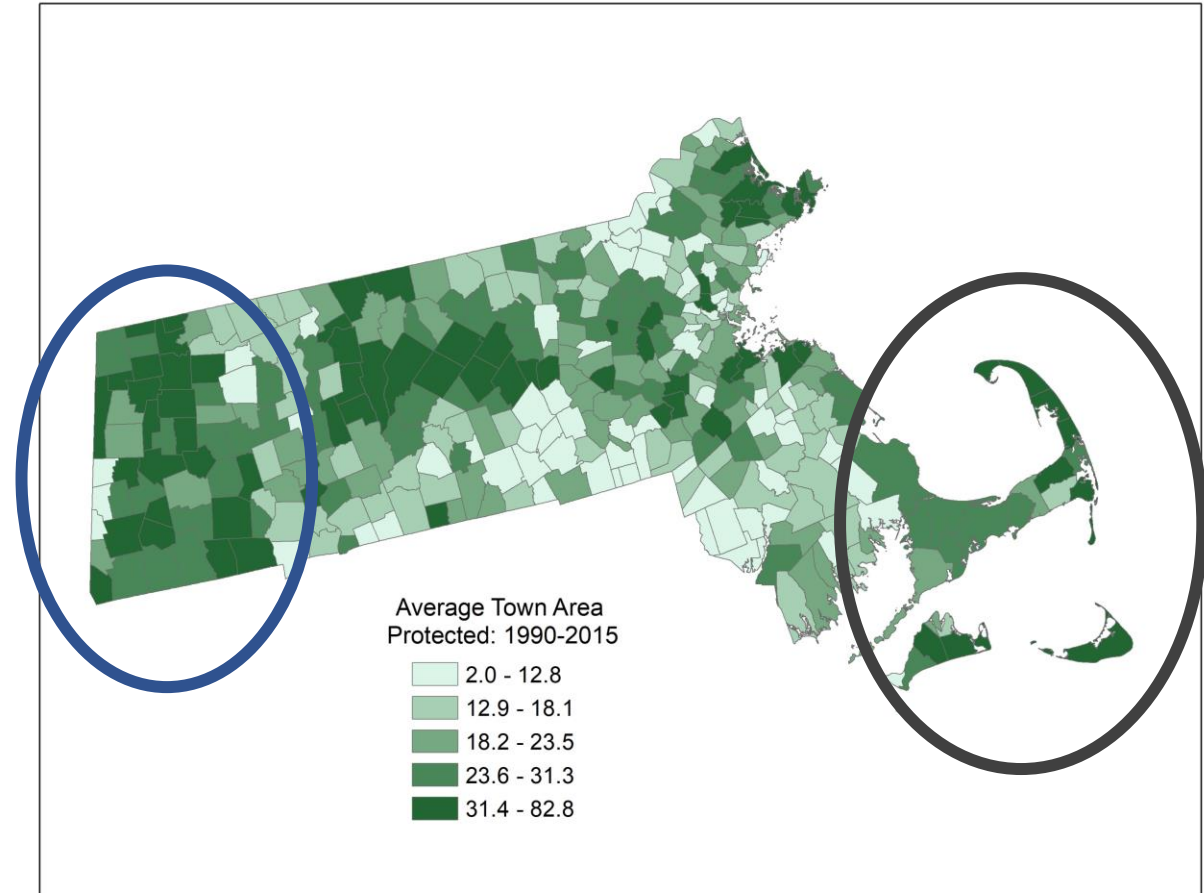
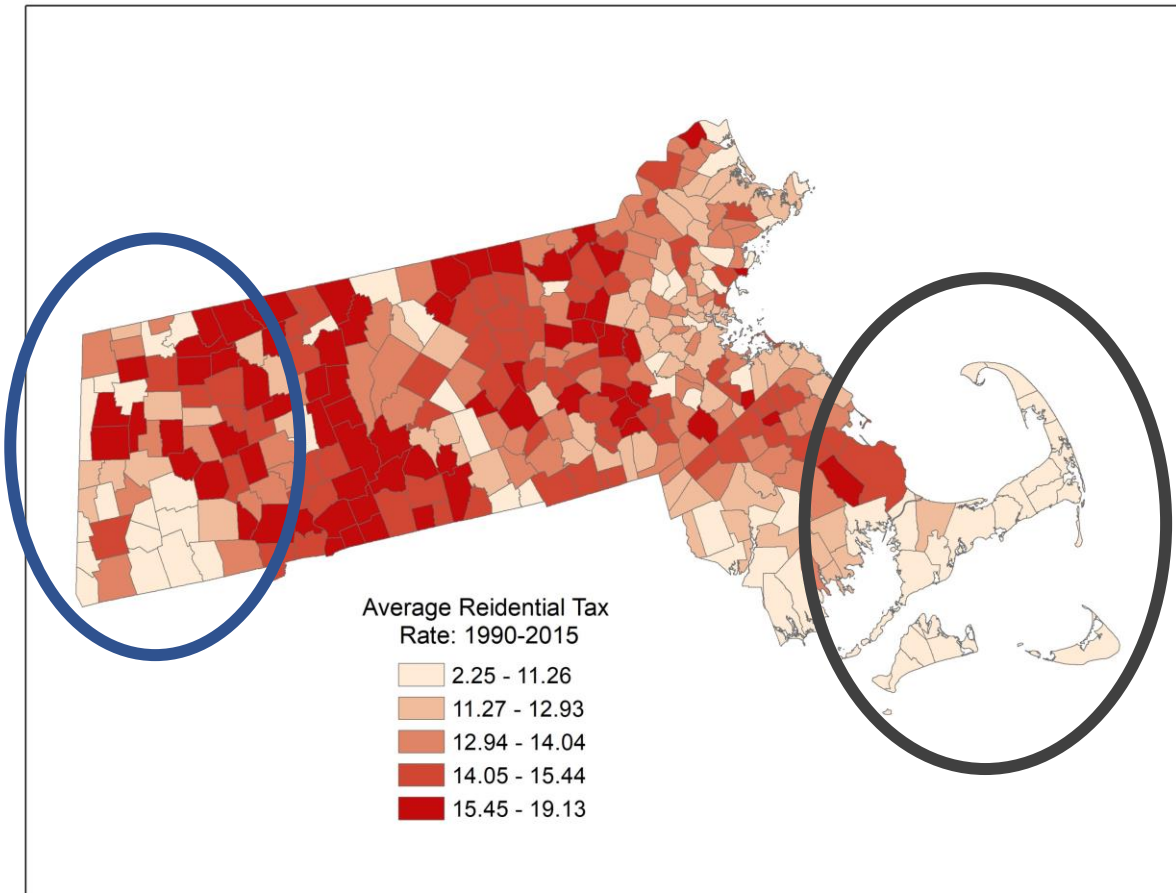
Residential Tax Rates & Protected Land Area



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Tax Impacts of Land Protection Are Ambiguous



Tax rates can **increase** or **decrease** or not change

Potential Tax Impacts

Lower taxes paid on protected lands:
tax rate (+)

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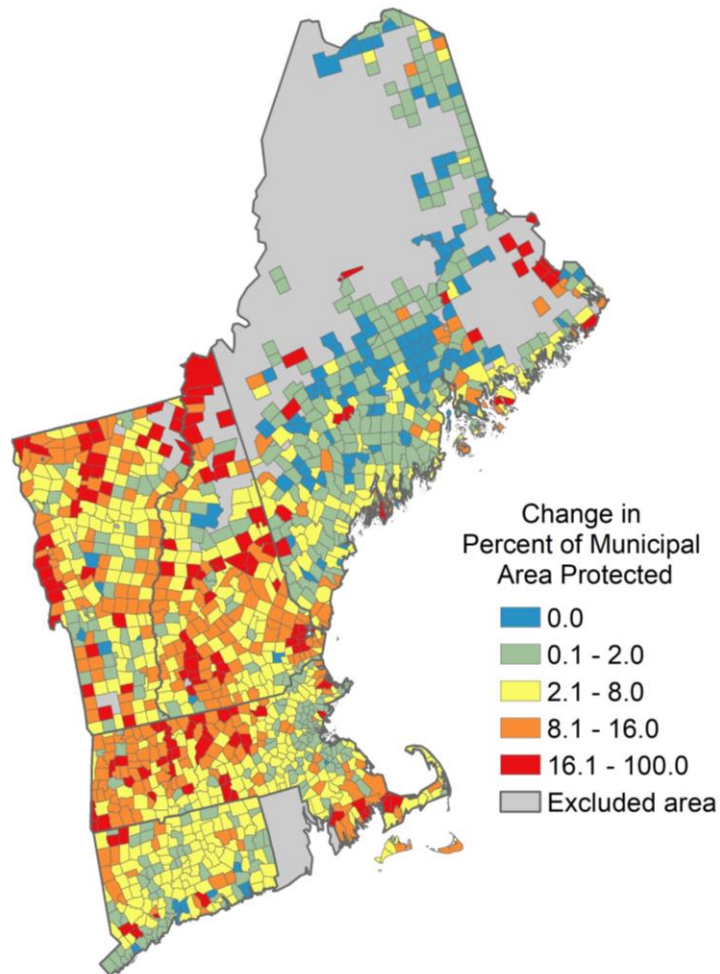
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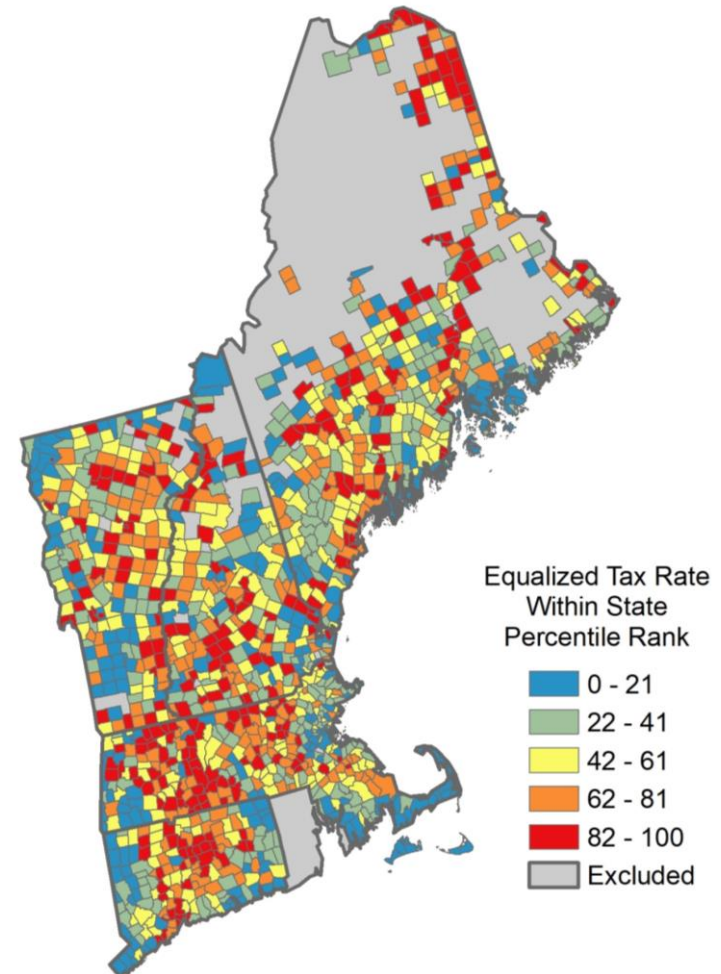
Local economic conditions affect tax
impacts (Income/Growth... etc)

Study Area: 1436 towns, 1990-2015

Change in Land Protection



Town Ranking, by Average Tax Rate

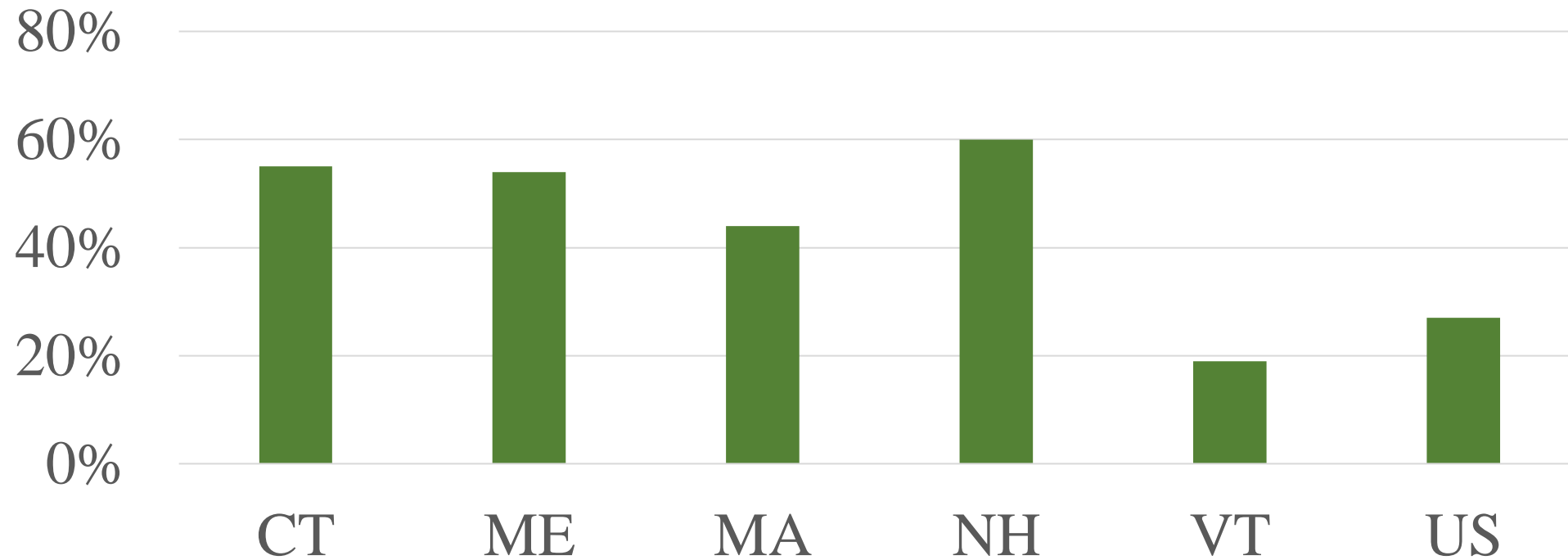


Study Data & Methods

- How to separate correlation from causation?
- We examine changes in tax rates that occur after changes in land protection
 - Use data on same towns over time
 - Control for changes in employment, growth in the tax base, and regional economic/population trends.
- Create four categories of protection: (i) NGO (ii) Municipal (iii) Conservation Easements on Private Land (iv) State/Federal

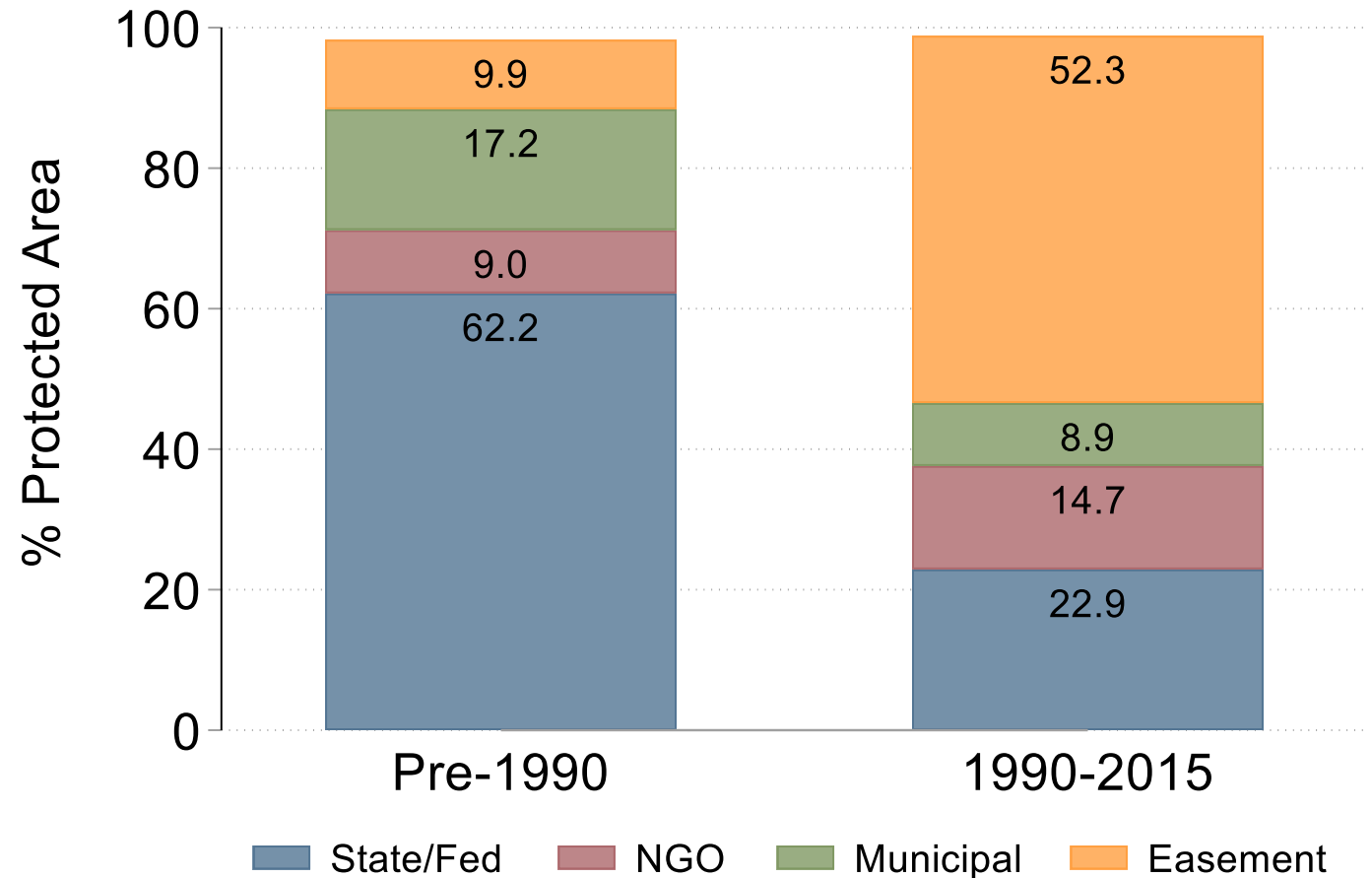
Local Reliance on Property Taxes

Prop Taxes as % of
Local Revenue



Change in Land Protection Over Time

- **Pre 1990:** Public ownership accounts for 79.4% of protected area
- **Post 1990:** Easement account for largest share. Public share falls to 31.8%.



Study Findings

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- For typical New England home (\$266,493), an additional \$1.92 on tax bill of \$3475

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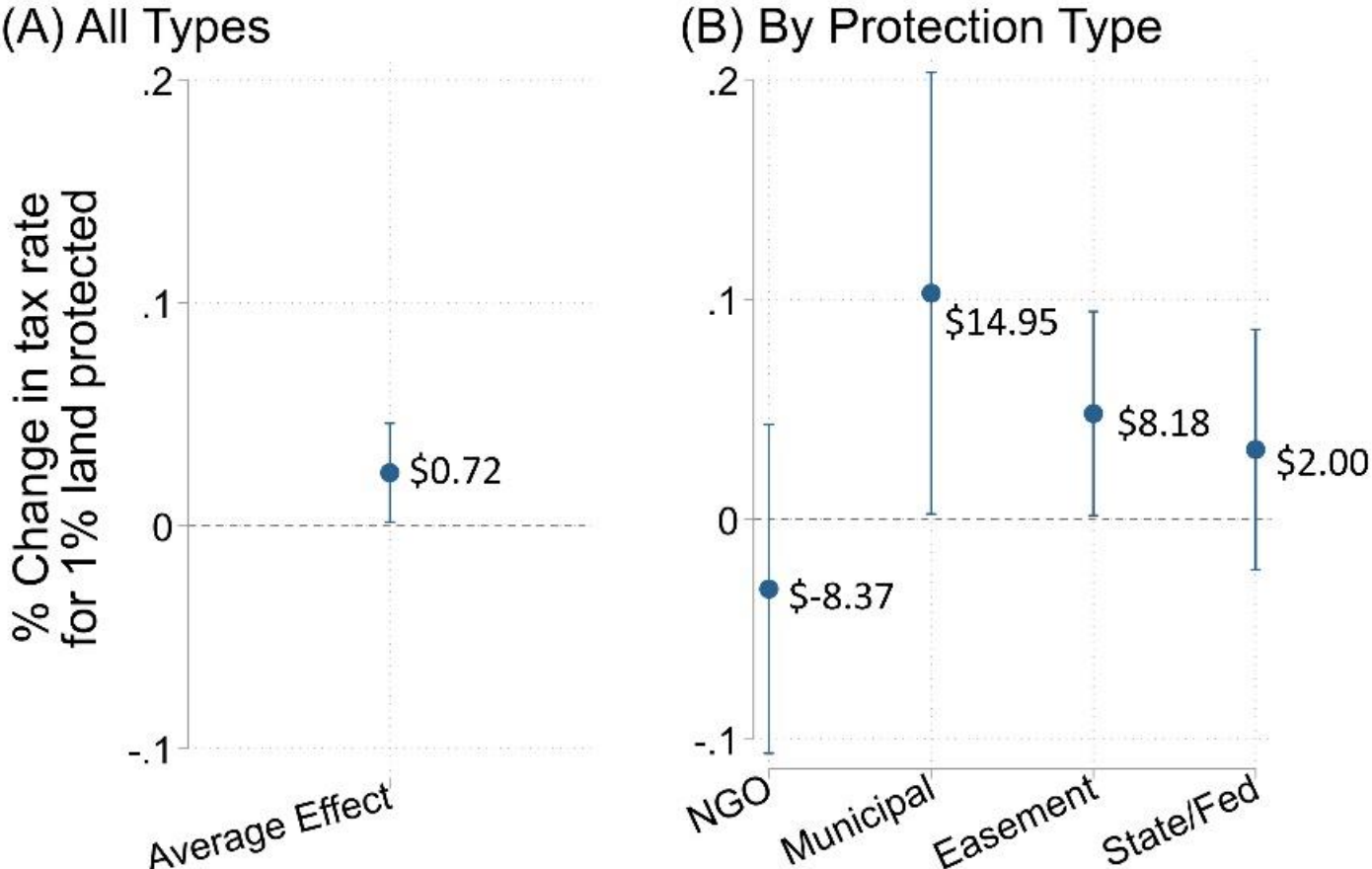
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(2) Tax rate increases don't persist beyond 3 years

(3) We observe differences by protection type & town characteristics

Differences in Impact by Protection Type



Expected changes in the tax bill per \$100,000 of property value, for 85 acres of new protection.

Differences in Impact by Town Characteristics

Town Characteristics	Magnitude of Tax Increase
Slower tax base growth	Larger tax increase.
Lower income	Larger tax increase.
More second homes	Smaller tax increase.
Smaller Tax Base	Not consistent.
More Land Protection	Not consistent.
Urban vs Rural	Significant tax increase in exurban towns only.
More Land in Current Use	Smaller tax increase.

The size of these impacts ranged from \$5 to \$30 in additional taxes paid for each \$100,000 in property value.

Town Expenditures

- Towns might also adjust expenditures
- We study impact on expenditures, using MA & CT data
- Don't separate out results by protection type
- Municipal expenditures & tax revenues do not decline

What Does This Mean for My Town?

- Our results are regional, speak to overall magnitudes
- Don't assume high tax rates are due to land protection
- Development doesn't only bring revenues, also has costs
- To understand tax rates in your town, consider other changes occurring to revenues and expenditures, tax base, state revenue sharing...etc

Conclusion

- Impacts of land protection are relatively small & don't last
- Differences by protection type & town characteristics
- Towns least able to afford tax increases may see the greatest impacts.
- Reducing these disparities could involve
 - Greater funding for state and federal "PILOT"
 - Increasing access to grants/matching funds for less prosperous towns
 - Contributions of funds by non-profits
 - Private fundraising to support municipal purchases
 - Credits for carbon sequestration or other ecosystem services.

Contact Info & Link to Paper

- Jonathan Thompson: jthomps@fas.harvard.edu
- Alexey Kalinin: alexey_kalinin@fas.harvard.edu
- Link to paper & summary: [paper & summary](#)

Additional Slides

Empirical Strategy

$$Ihs\Delta TaxRate_{ic,t} = \beta_1 Ihs\Delta PrctConserved_{ic,t-1} + \Delta X_{ic,t-1} + \gamma_{st} + \omega'(t \times \lambda_c) + \Delta \varepsilon_{ic,t}$$

- i = township, t =time period, c = *Core Based Statistical Area* (CBSA)
- 8 time periods: 1992-1994, 1995-1997.... 2013-2015
- $X_{ic,t-1}$ – labor market controls for people in labor force and unemployment rate
- $Prct Conserved_{ic,t-1}$ – % of town area conserved in prior time period
- γ_{st} – control for year specific shocks, by state
- $(t \times \lambda_c)$ – CBSA time trends, control for economic trends in same urban areas.