

Does Removing Federal Subsidies Discourage Development?

An Evaluation of the Impact of the U.S. Coastal Barrier Resources Act

Kyle Onda, Jordan Branham, Todd BenDor,, **Nikhil Kaza**, David Salvesen
Department of City and Regional Planning, UNC-Chapel Hill

nkaza@unc.edu

Funded by NSF GSS Grant #1660450

Motivation



Do disincentives
discourage
development?

CBRA System Units/OPA

CBRA prohibits federal (but not state or local) financial assistance (e.g., loans, grants, flood insurance, rebates, subsidies or financial guarantees) for roads, bridges, utilities, erosion control, and post-storm disaster relief for new development on designated “undeveloped” sections (CBRA units) of coastal barriers along the Atlantic and Gulf coasts.

Areas that had < 0.2 structures/acre in 1982.



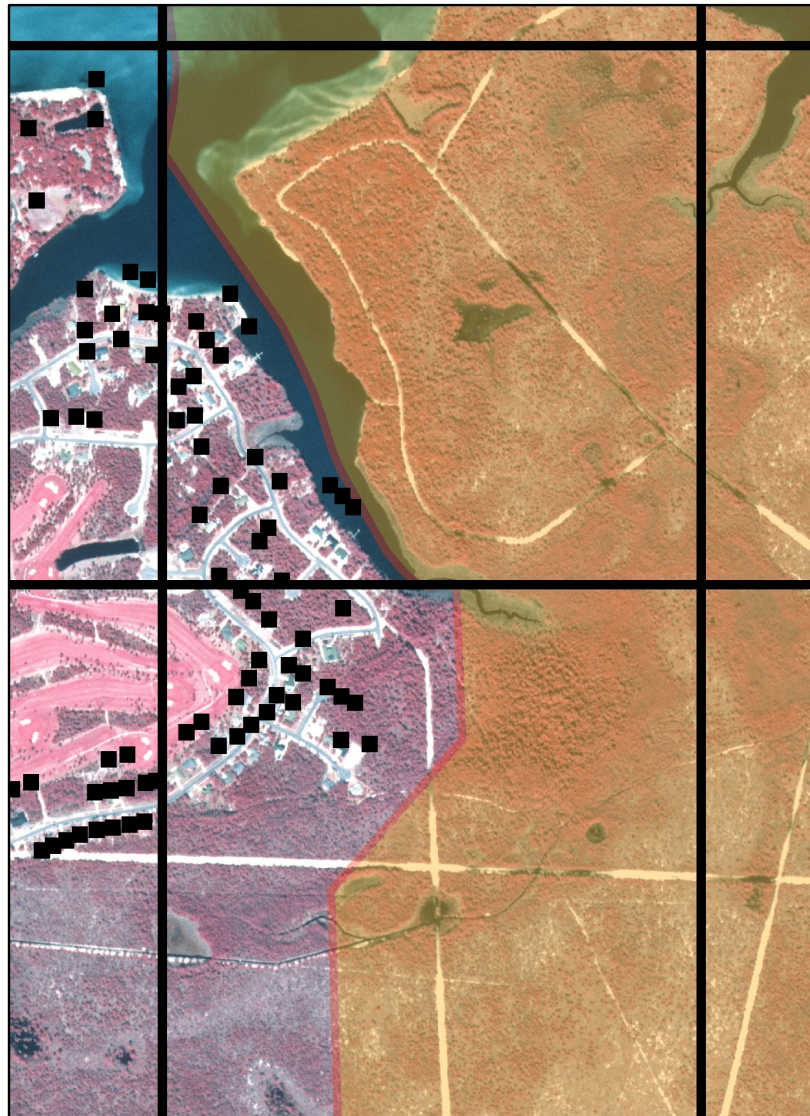
| Category | NFIP? | Other federal expenditures available? | Development unrestricted? (“unprotected”) |
|---------------------------------|--------------|--|--|
| Non-system, unprotected | Yes | Yes | Yes |
| Non-system, protected | Yes | Yes | No |
| OPA | No | Yes | No |
| System unit, unprotected | No | No | Yes |
| System unit, protected | No | No | No |

| Category | NFIP | Other Fed. Exp. | Un-protected | Area(ha) | Area (%) | Parcels (count) | Average Parcel size (ha) |
|---------------------------------|-------------|------------------------|---------------------|-----------------|-----------------|------------------------|---------------------------------|
| Non-system, unprotected | Yes | Yes | Yes | 459,905 | 38% | 1,228,760 | 0.3 |
| Non-system, protected | Yes | Yes | No | 195,473 | 16% | 110,886 | 1.8 |
| OPA | No | Yes | No | 244,823 | 20% | 9,196 | 26.6 |
| System unit, unprotected | No | No | Yes | 243,994 | 20% | 21,879 | 11.2 |
| System unit, protected | No | No | No | 76,769 | 6% | 14,831 | 6.2 |

Research Design, Data & Methods

- Defined comparison areas to “un-protected”, non-CoBRA areas
 - Sampled all area within 2km of coastline from states from Texas to North Carolina
- Microsoft US Building Footprints to aggregate structure count and built-up area within treatment categories
- Zillow and National level parcel dataset from 2016 (~200 million records), to aggregate parcels and their properties (land use, sq.ft, assessed value , sales price, etc.) within 2km of the coast, within treatment categories (~1.4 million records)
- Cluster analysis of counties based on growth patterns.

0 0.25 0.5 1 Kilometers



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

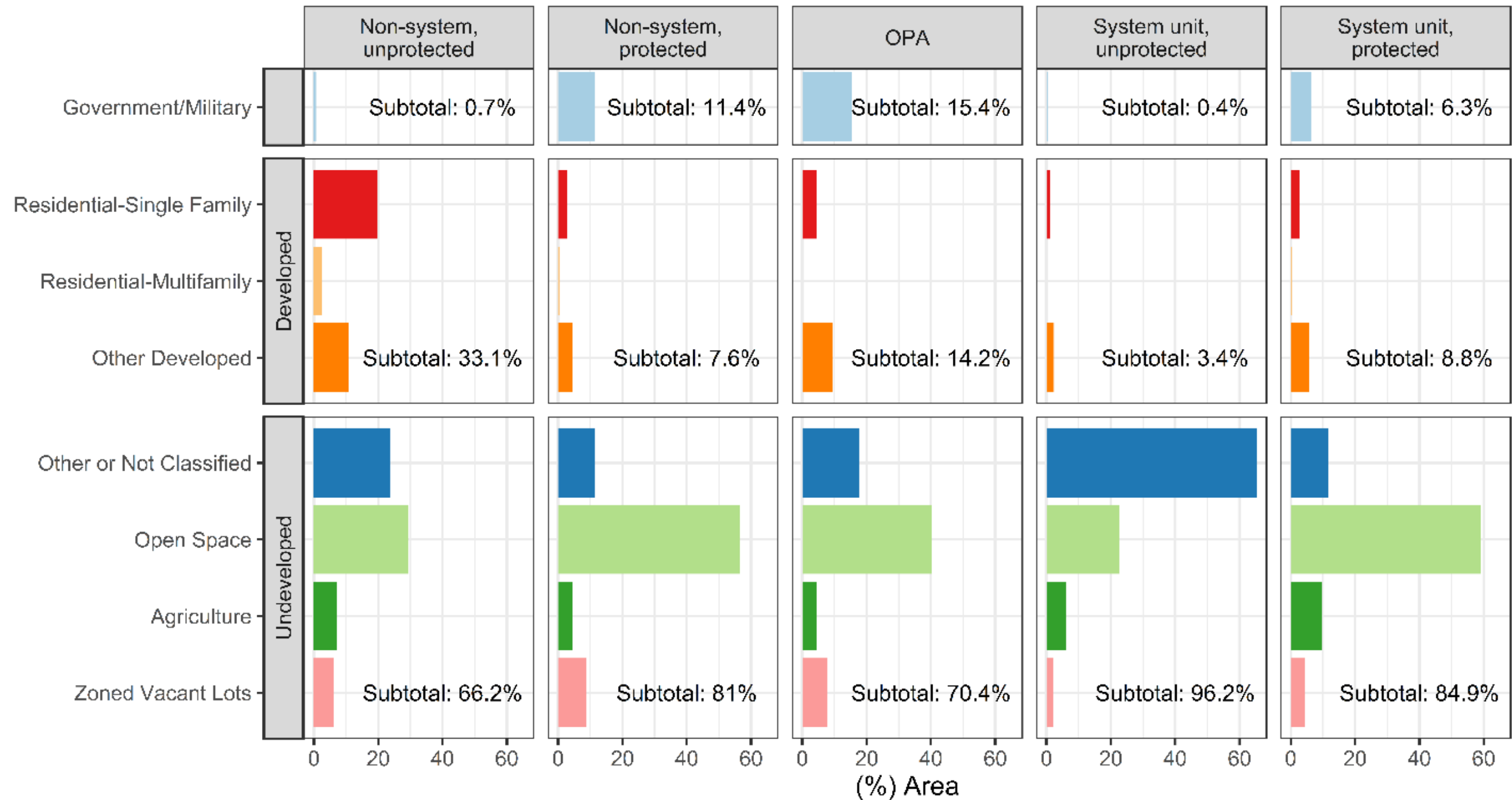
1982

2016

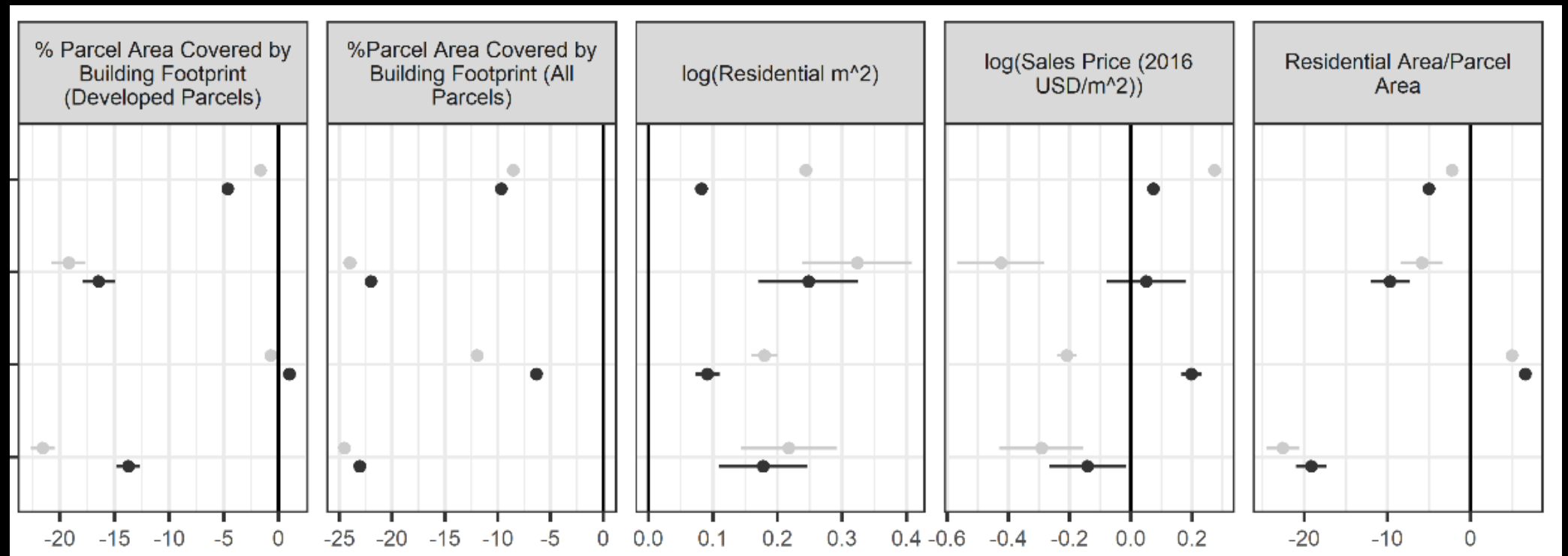
 Sample Grid  Structures
 CBRA Units

Results

(%) Area Land Use Categories (Zillow) by Development Disincentive Category

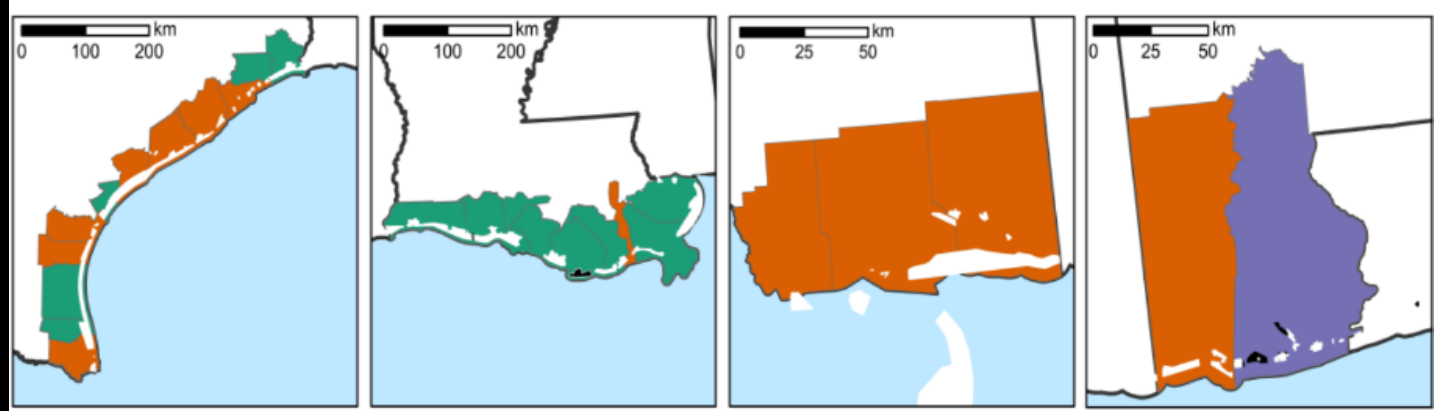
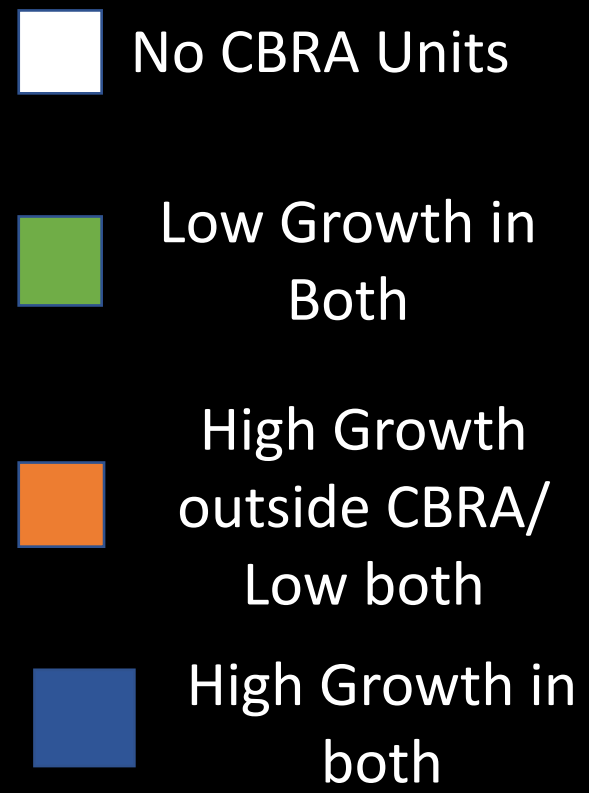
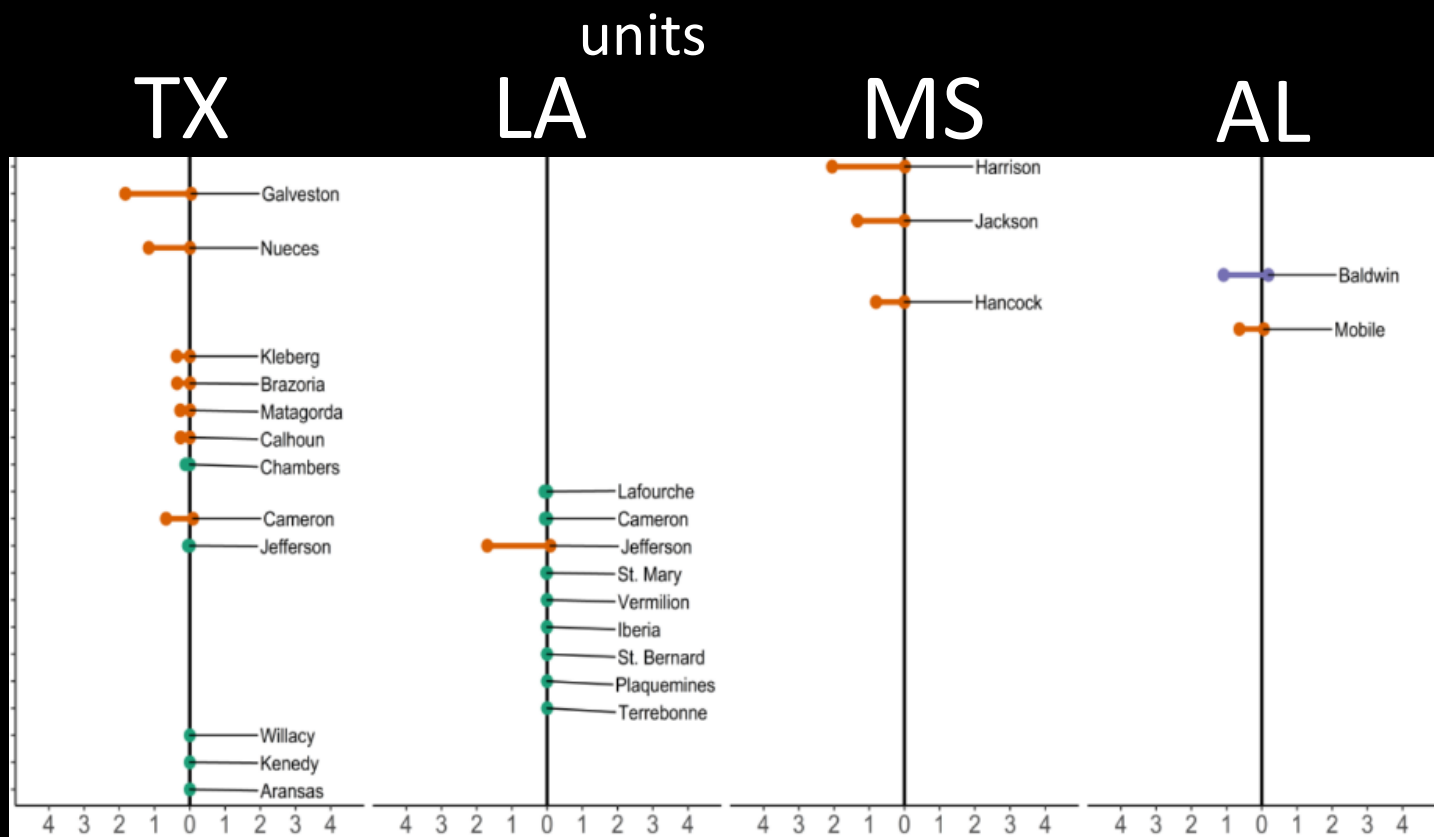


Single Family Residential Characteristics



● County Fixed Effects ● No Fixed Effects

← Outside CBRA | Inside CBRA →



Density change 1982-2016



Outside CBRA | Inside CBRA



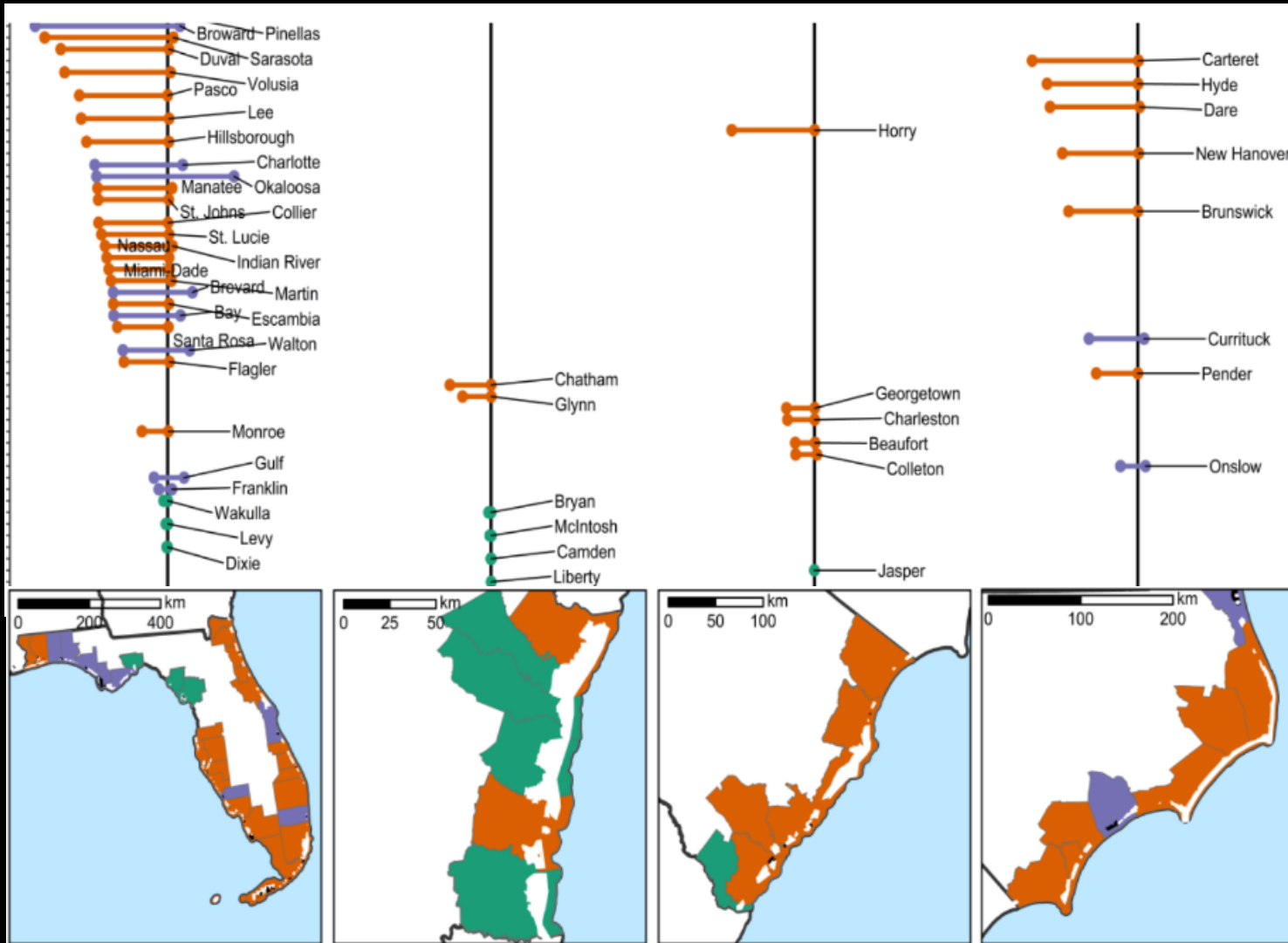
FL

GA

SC

NC

units



No CBRA Units

Low Growth in Both

High Growth outside CBRA/ Low both

High Growth in both

Density change 1982-2016

Did CBRA work?

Yes!
(mostly)

Limitations

- Endogenous CoBRA delineation
- Rely on Zillow for land use categorizations
 - (county LU data standards -> national standards uncertain)