

# The Influence of Urban Areas on Farmland Values

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Rising Farmland Values: Causes & Cautions  
Federal Reserve Bank of Chicago

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those of the authors and should not be attributed  
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# ERS Farmland Values Research

- Utilizing confidential and geo-coded datasets
  - USDA NASS June Area Survey
  - County transaction data
- Impact of different farm programs
- Influence of non-agricultural factors
- Returns to farmland investment
  - Giannini Foundation ARE Update article:  
[http://giannini.ucop.edu/media/are-update/files/articles/V15N1\\_3.pdf](http://giannini.ucop.edu/media/are-update/files/articles/V15N1_3.pdf)

# Factors Influencing Farmland Values

- Agricultural returns
- Government program payments
- Recreation uses
- Lifestyle amenities
- Macroeconomic conditions
- **Urban pressure**

# Causes of Urban Influence

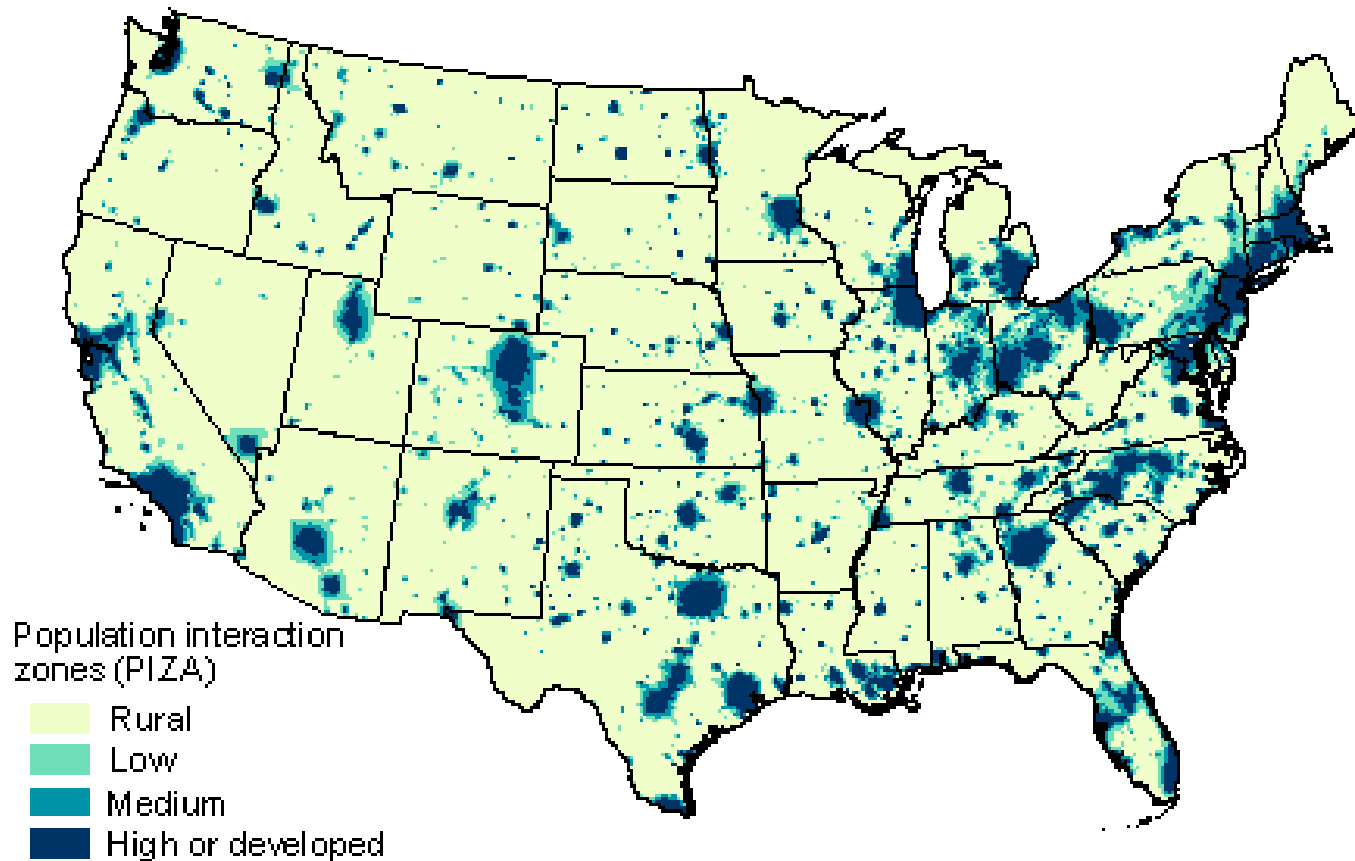
- Conversion to commercial or residential use
- Proximity to markets, lower transportation costs
- Recreation, lifestyle amenities
- Urban development originally located in more fertile areas
- Can also be negative:
  - Health and environmental conflicts
  - Higher input costs

# Measuring Urban Influence

- Linear Distance
- ERS Population Interaction Zones for Agriculture (PIZA)
  - Identifies areas where agricultural production activities affected by interaction with urban-related population
  - Captures impacts of size and density of urban areas

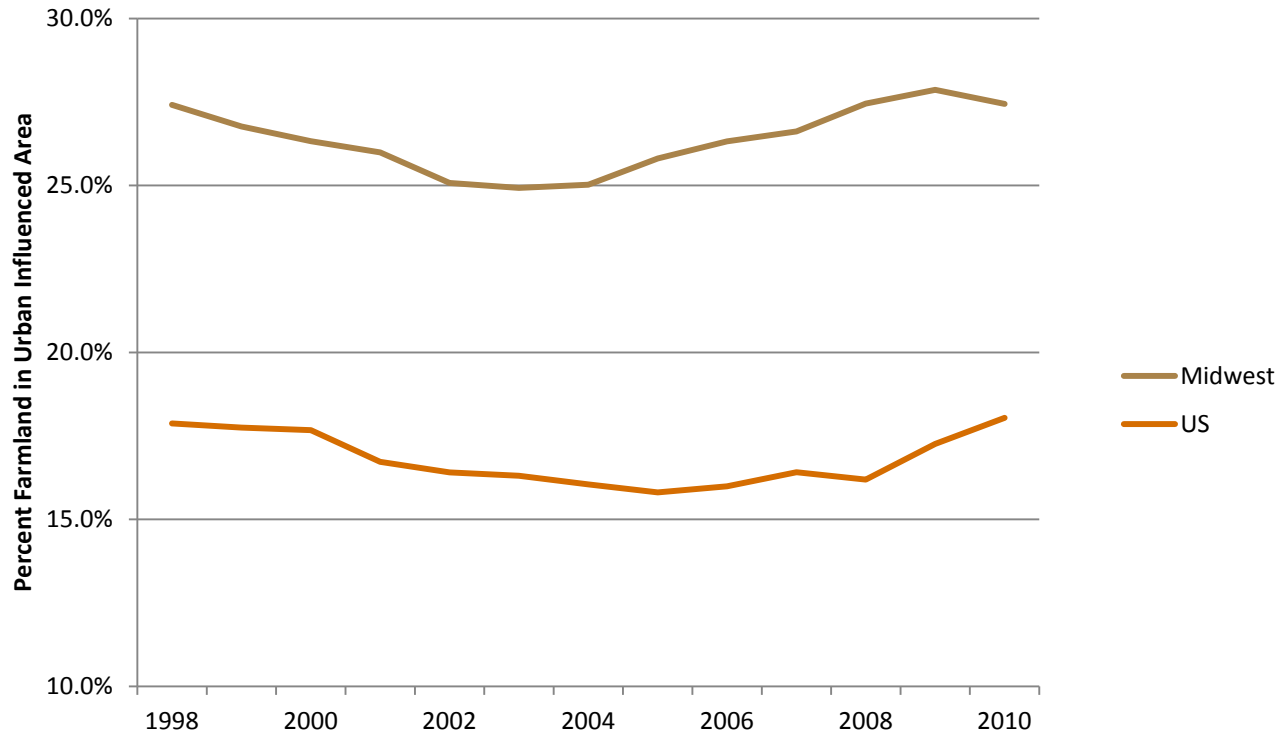
# PIZA Zones Classify Urban Influence of Different Cities

Population interaction zones (PIZA), 2000



Source: ERS analysis of 2000 census of population block data.

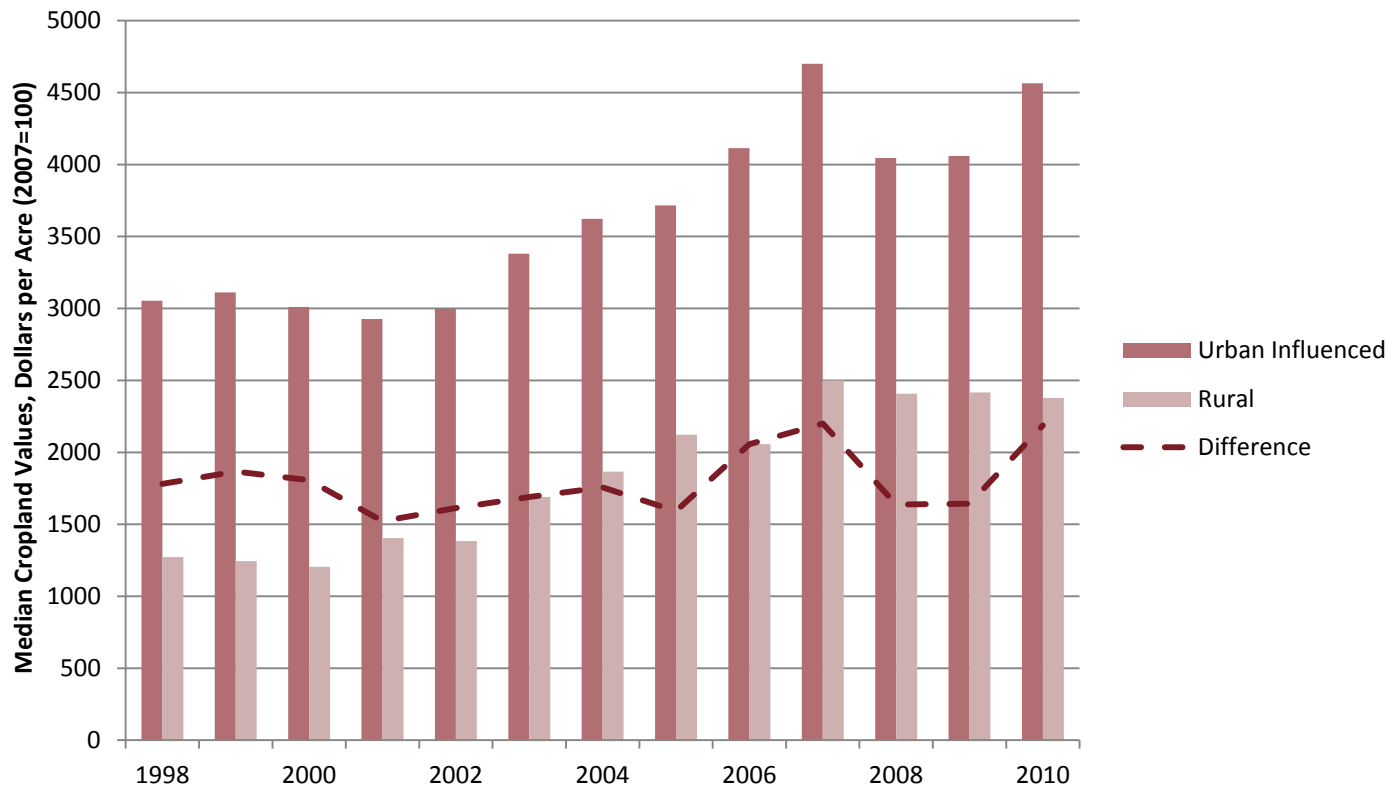
# A Greater Share of Midwest Farmland is in Urban-Influenced Areas



Midwest includes Illinois, Indiana, Iowa, Michigan & Wisconsin

Source: USDA/NASS June Area Survey

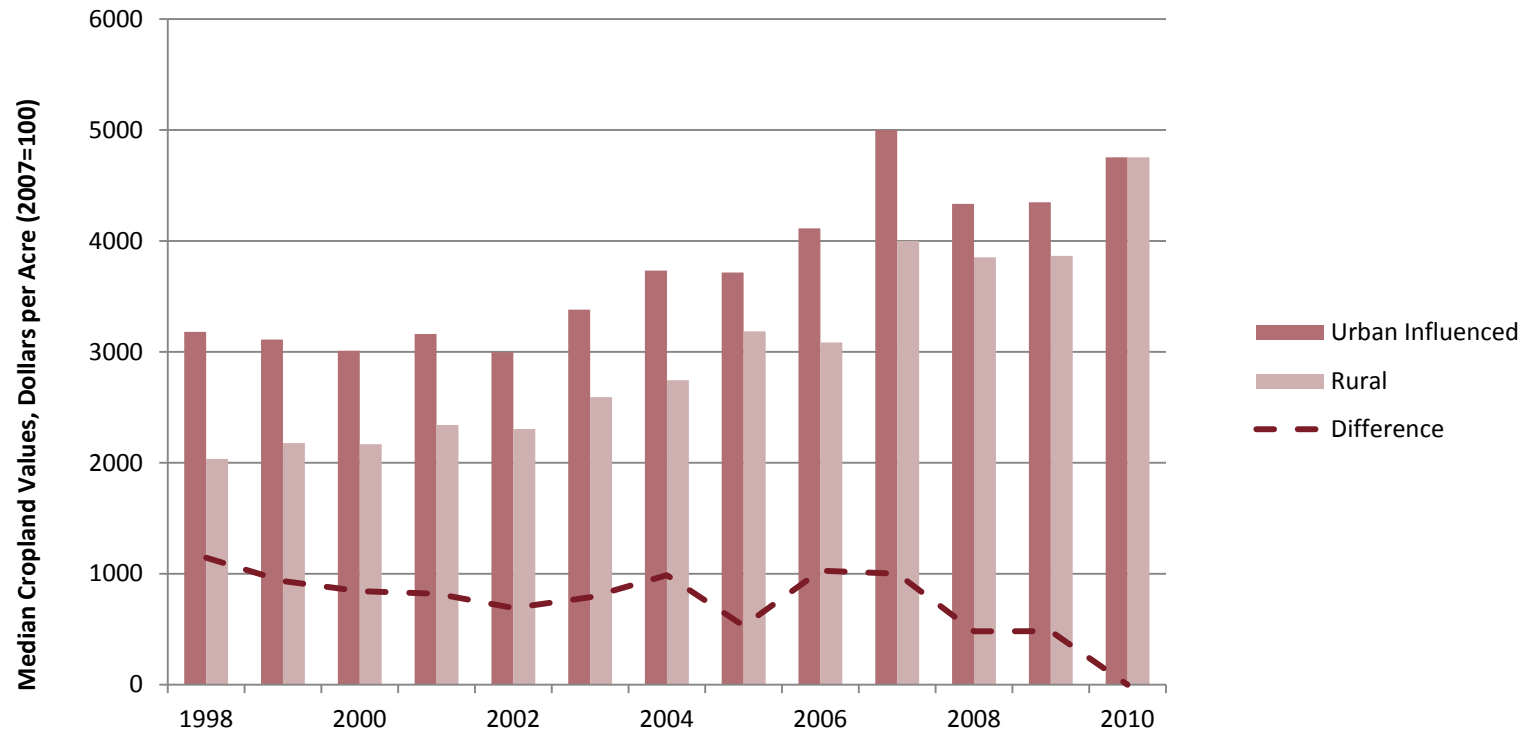
# Nationally Urban-Influenced Cropland has Higher Values



Source: USDA/NASS June Area Survey

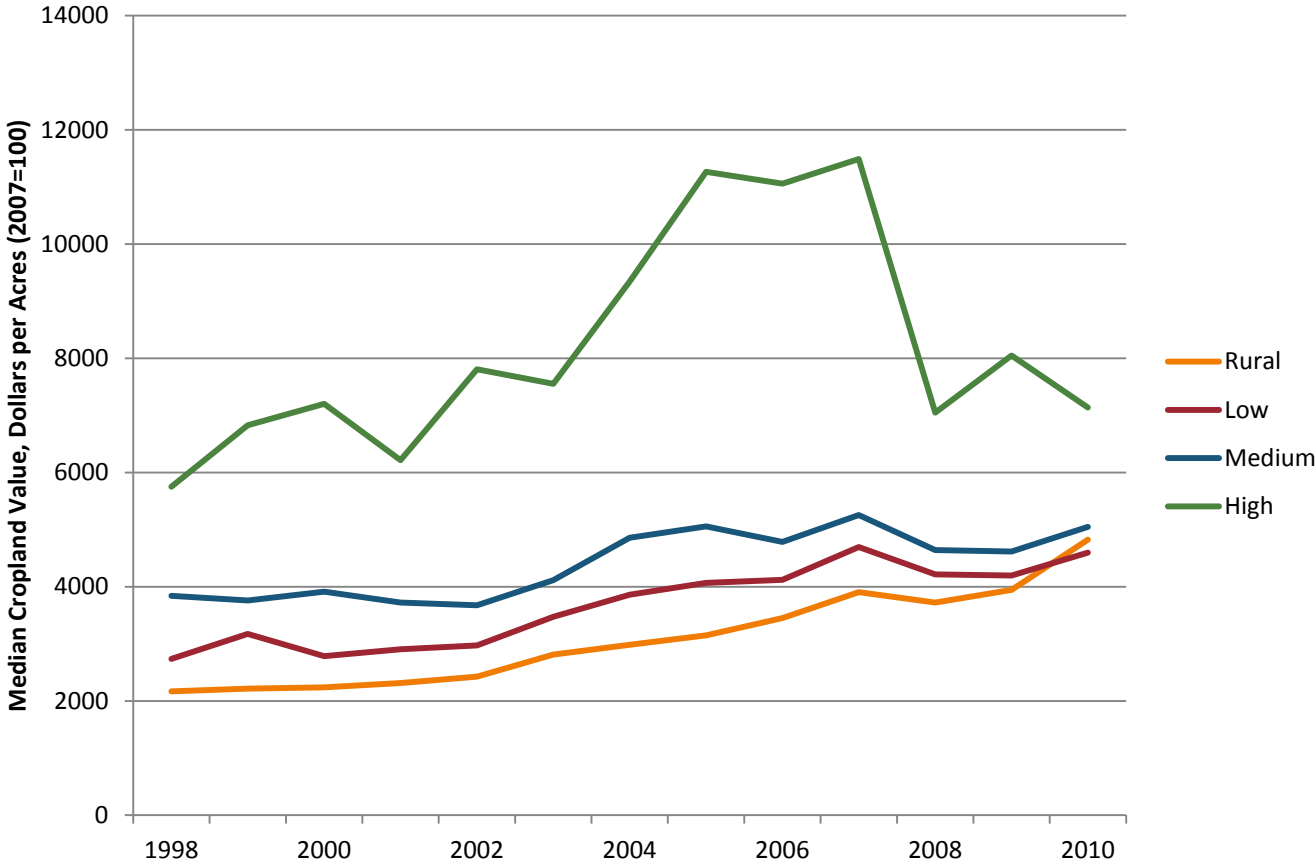


# The Difference between Urban-influenced and Rural Cropland Values is Declining in the Midwest



Source: USDA/NASS June Area Survey

# Value from Urban Influence is Much Greater in Highly Urban Areas












Source: USDA/NASS June Area Survey

# Controlling for Agricultural Value

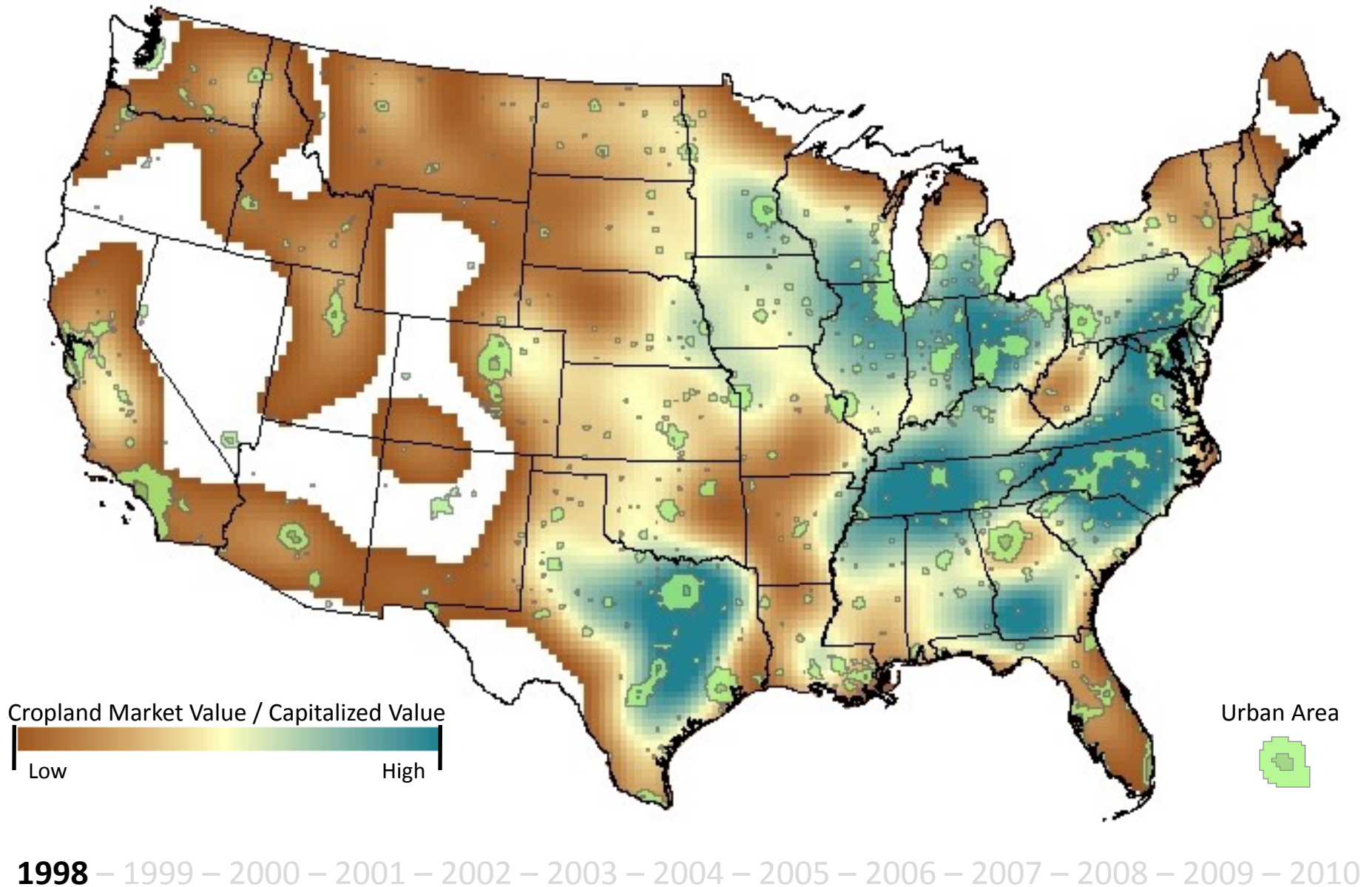
- Urban vs. rural values confounded by different agricultural production values
- Ratio of cropland values to capitalized rents
  - Commonly called “Price-to-Rent Ratio”
  - Capitalized rents proxy for agricultural use value
  - Rents/discount factor (10 year U.S. Treasury note)
- Ratio of 1 implies market value = agricultural land use value
  - Higher ratio implies larger non-agricultural influence
  - Lower ratio implies smaller non-agricultural influence

# Price-To-Rent Ratio

$$\frac{\text{Land Value}}{\left(\frac{\text{Rent}}{\text{Interest}}\right)}$$

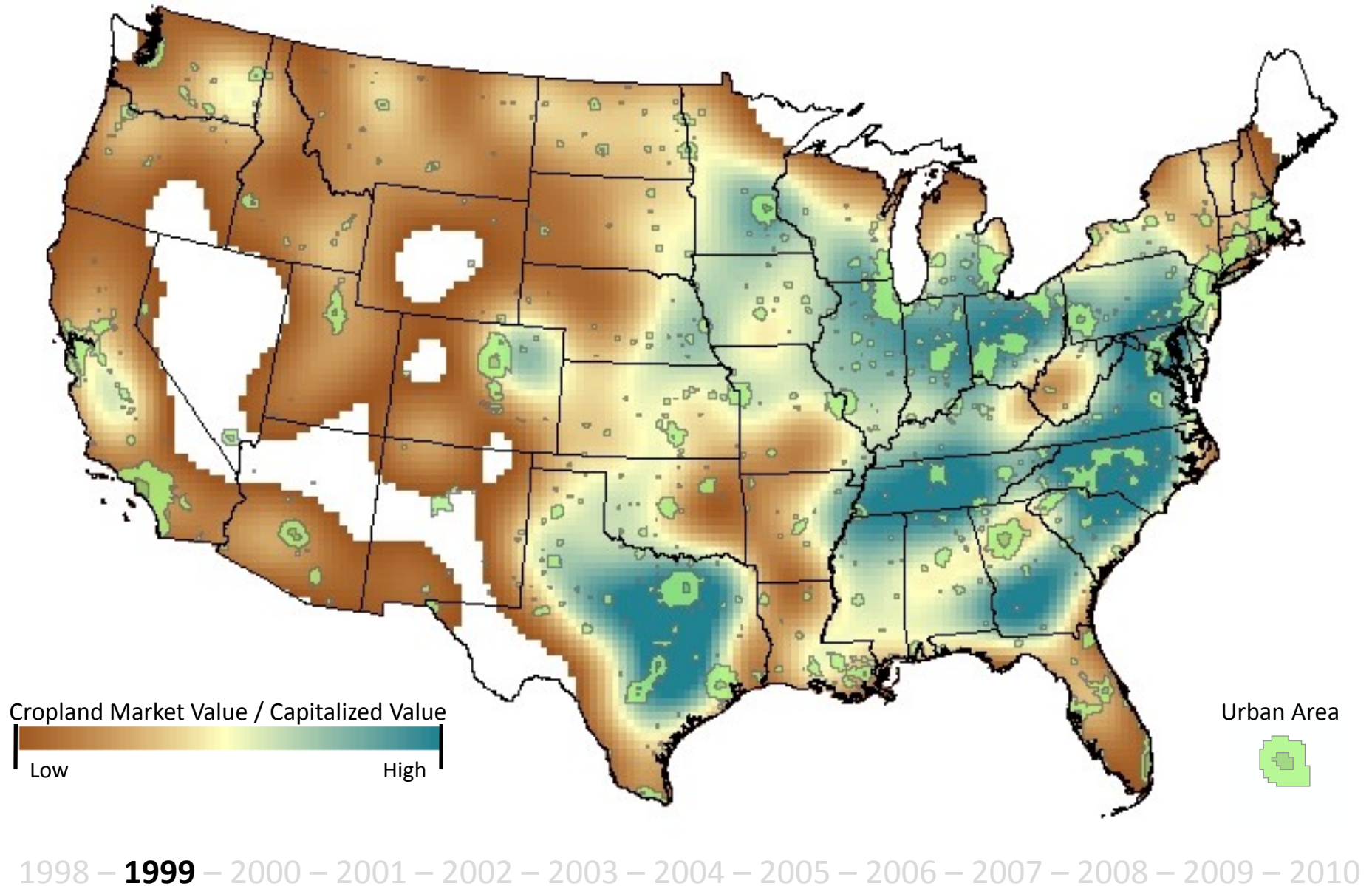
- Land Values   Ratio 
- Rent   Ratio 
- Interest   Ratio 

# Price-to-Rent Ratio for Cropland



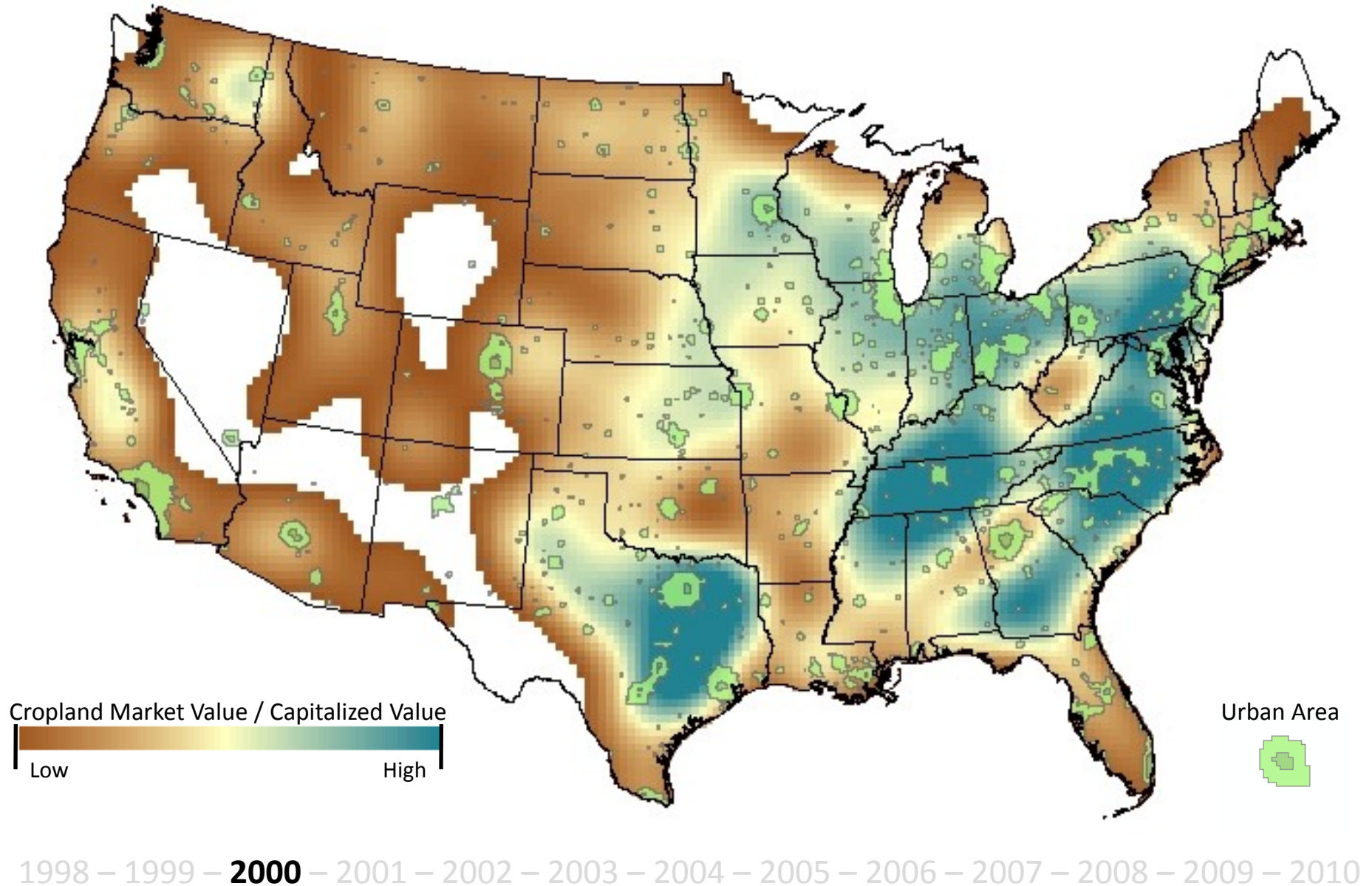
Source: NASS June Area Survey

# Price-to-Rent Ratio for Cropland



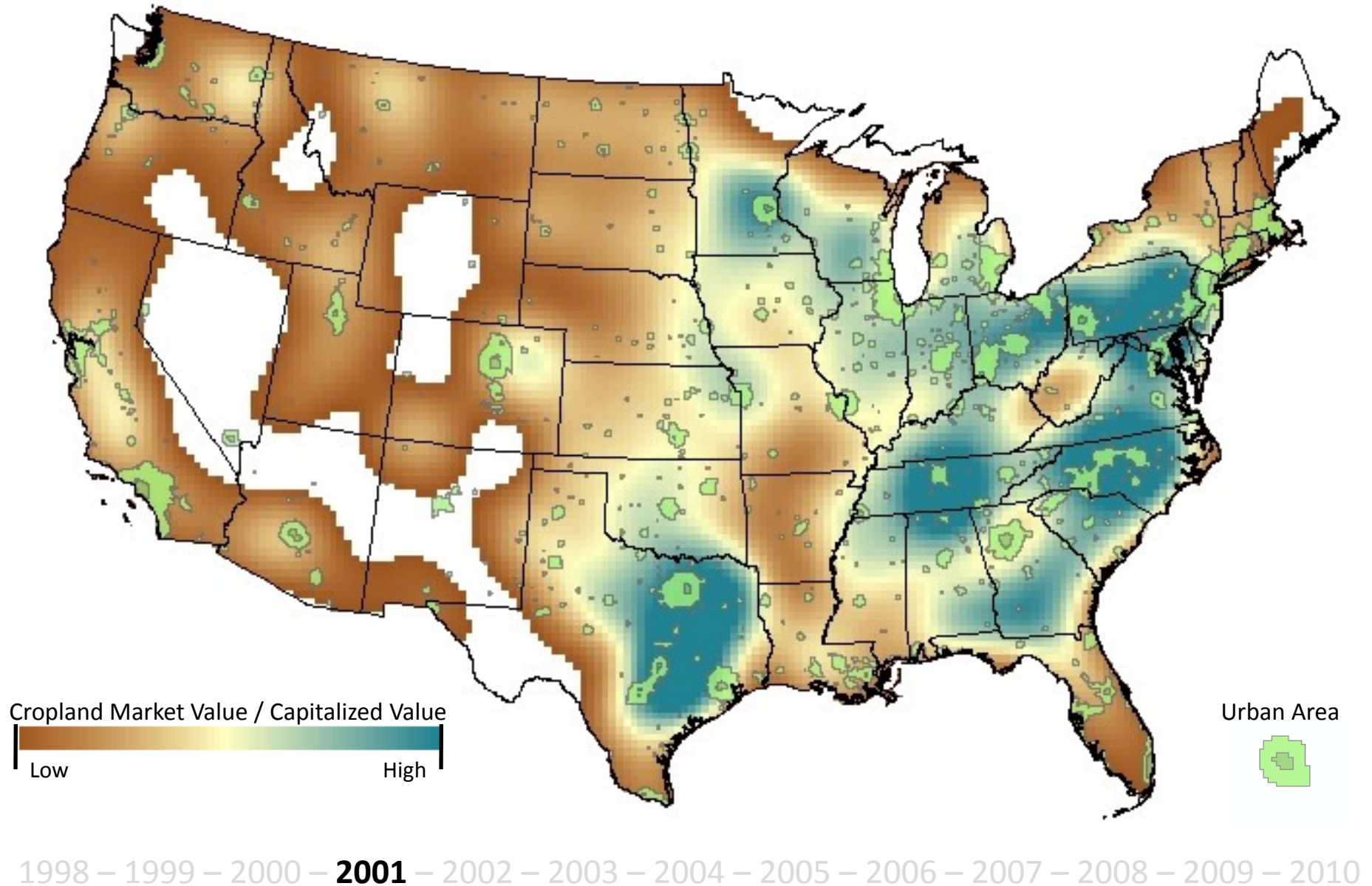
Source: NASS June Area Survey

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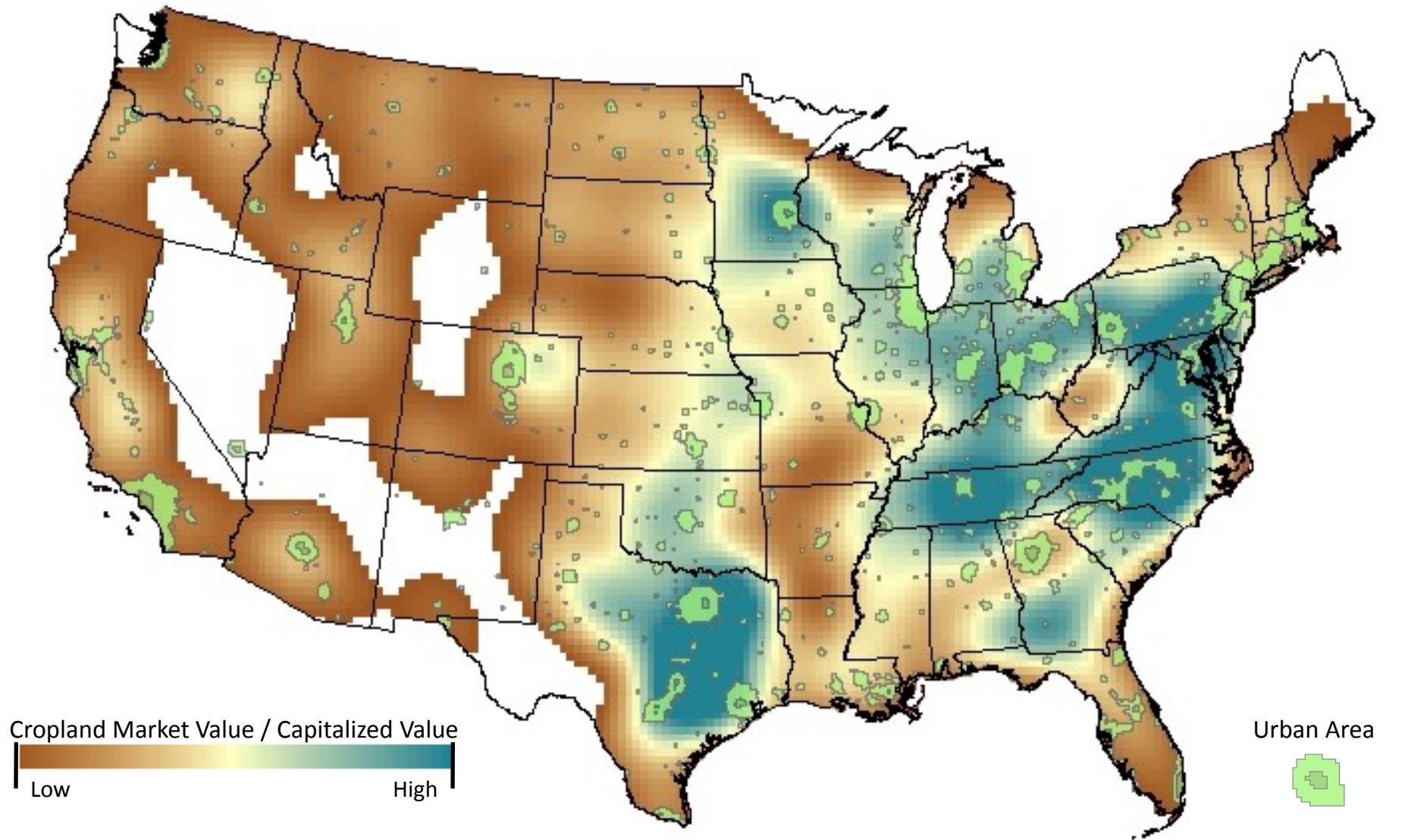
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Source: NASS June Area Survey



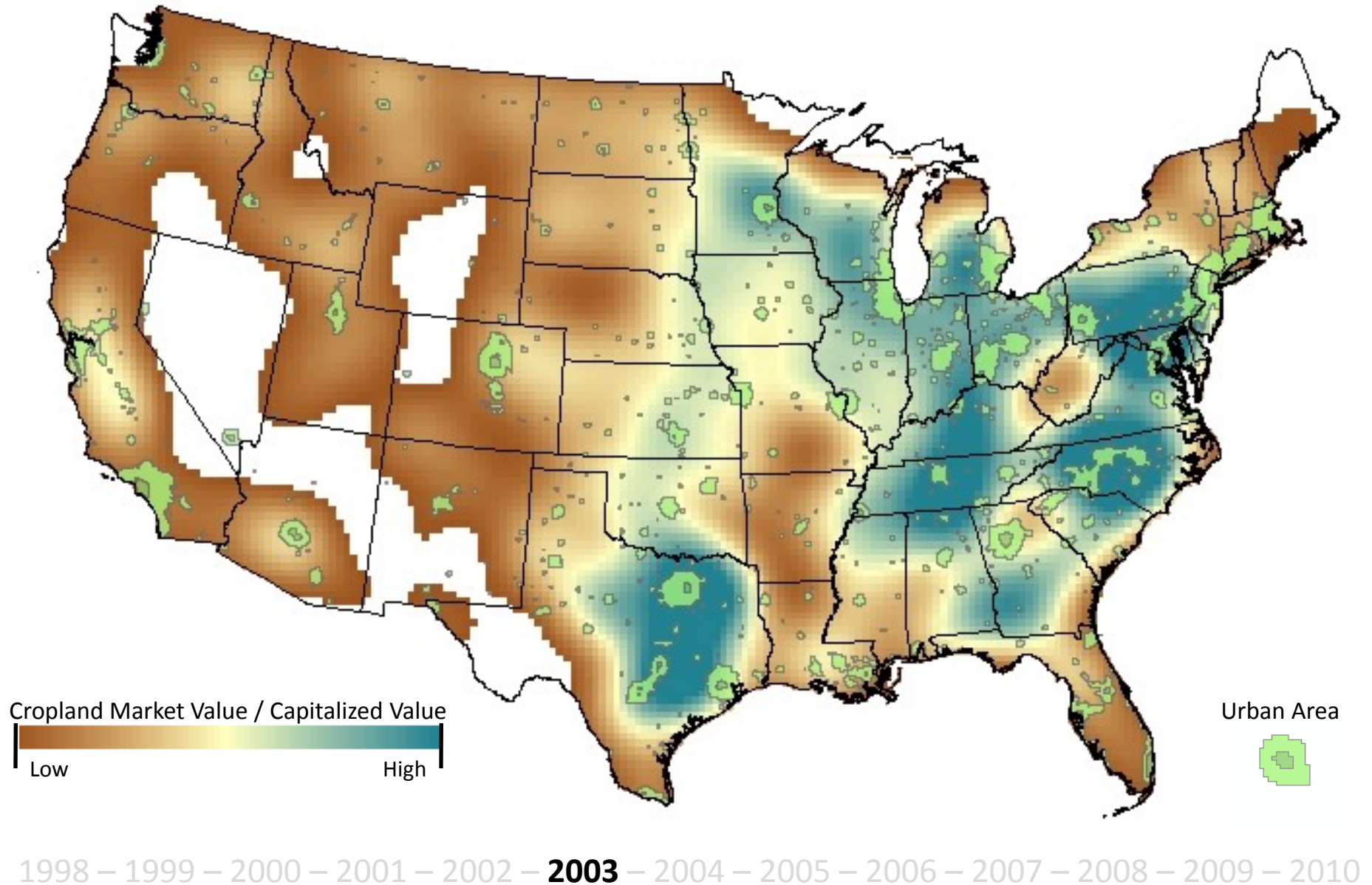
# Price-to-Rent Ratio for Cropland



1998 – 1999 – 2000 – 2001 – **2002** – 2003 – 2004 – 2005 – 2006 – 2007 – 2008 – 2009 – 2010

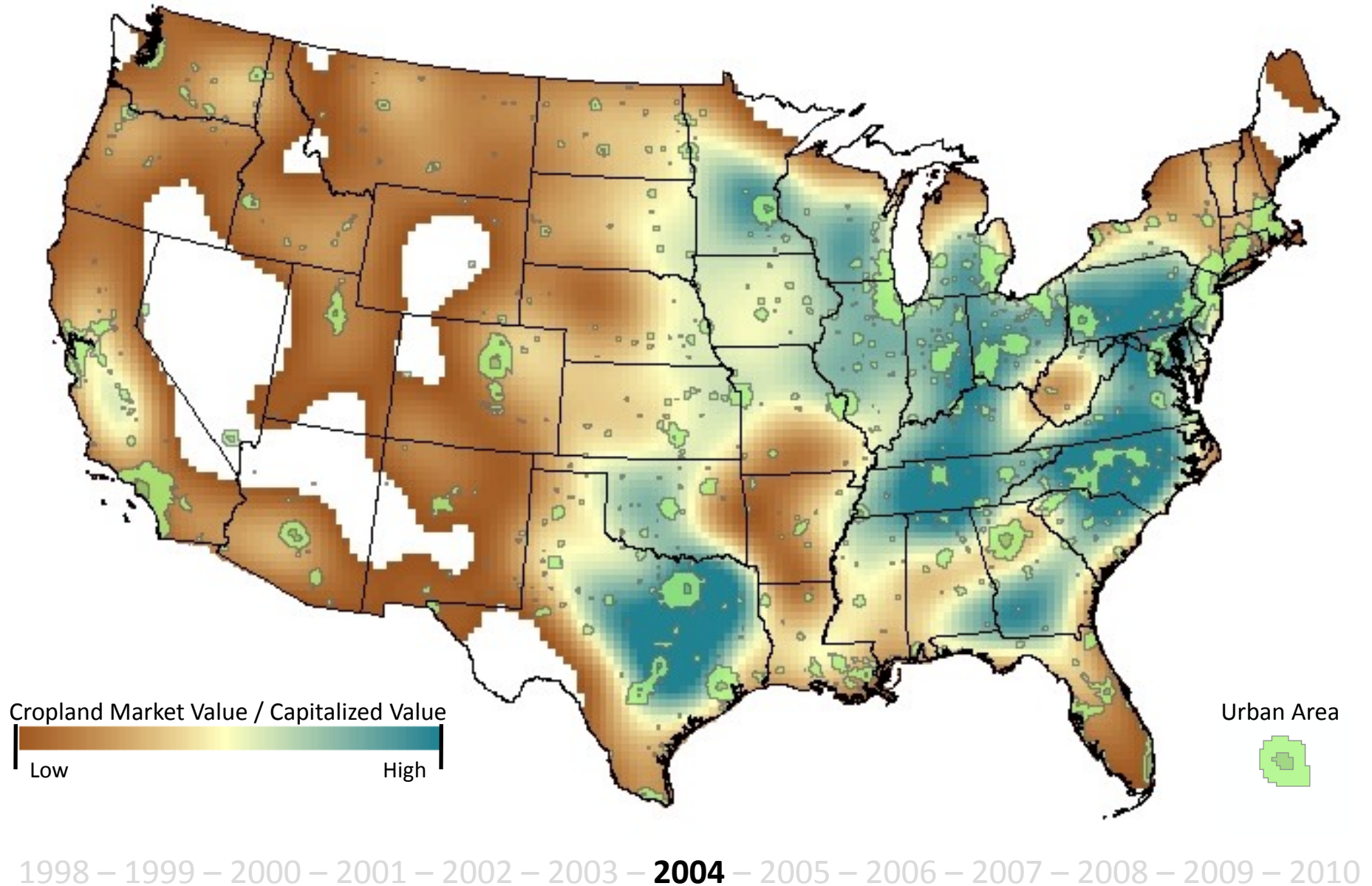
Source: NASS June Area Survey

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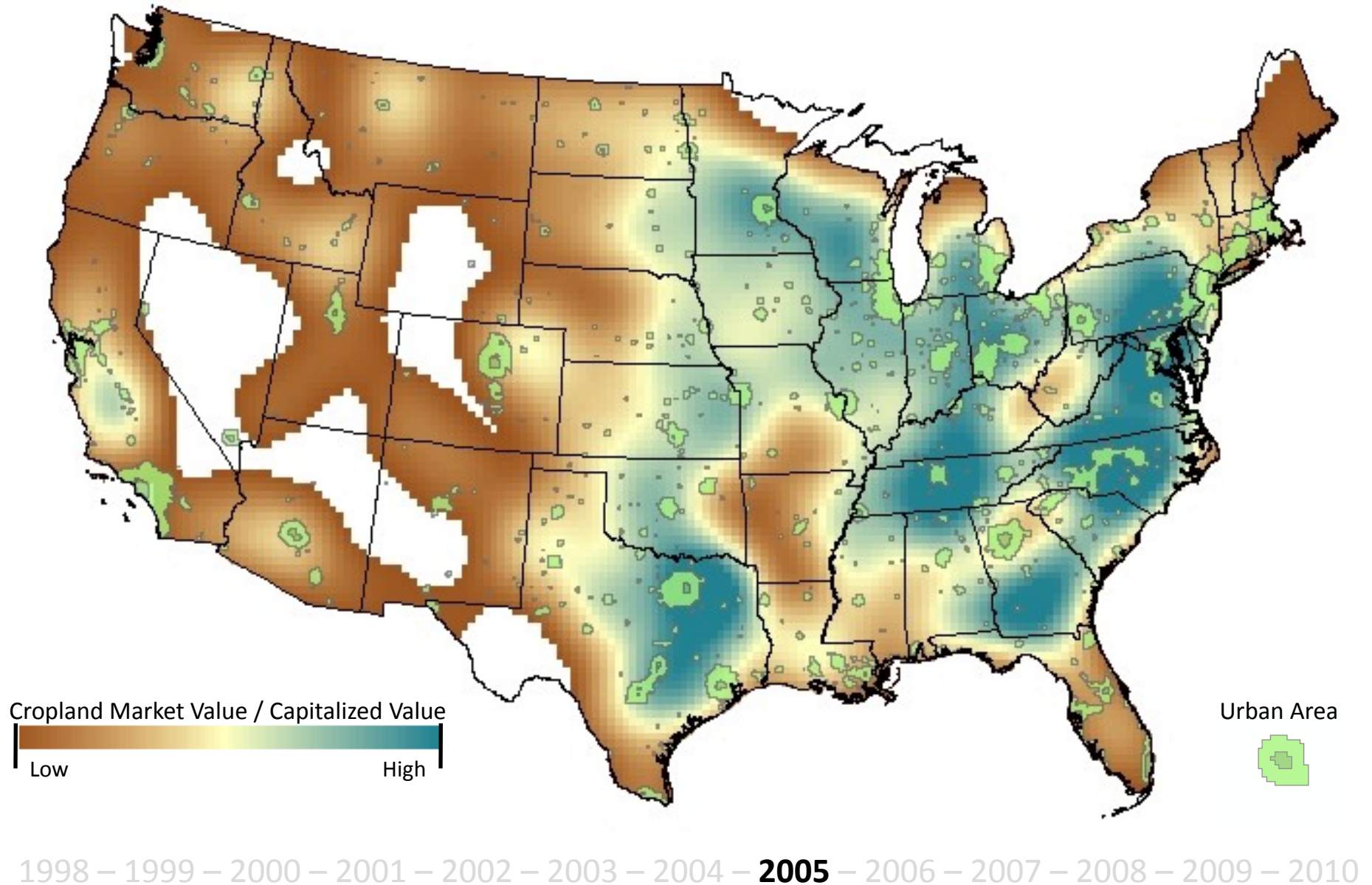
Source: NASS June Area Survey

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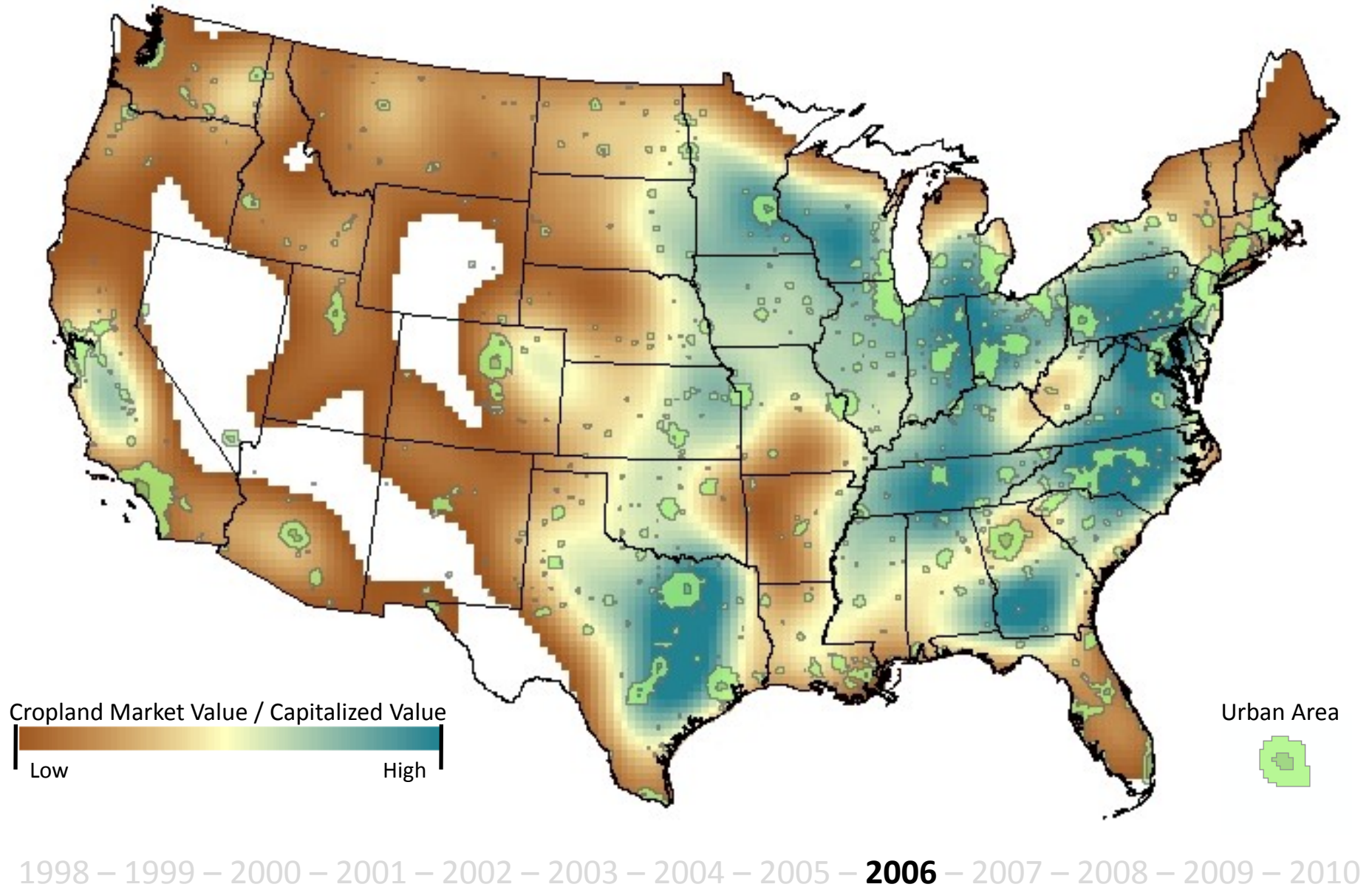
Source: NASS June Area Survey

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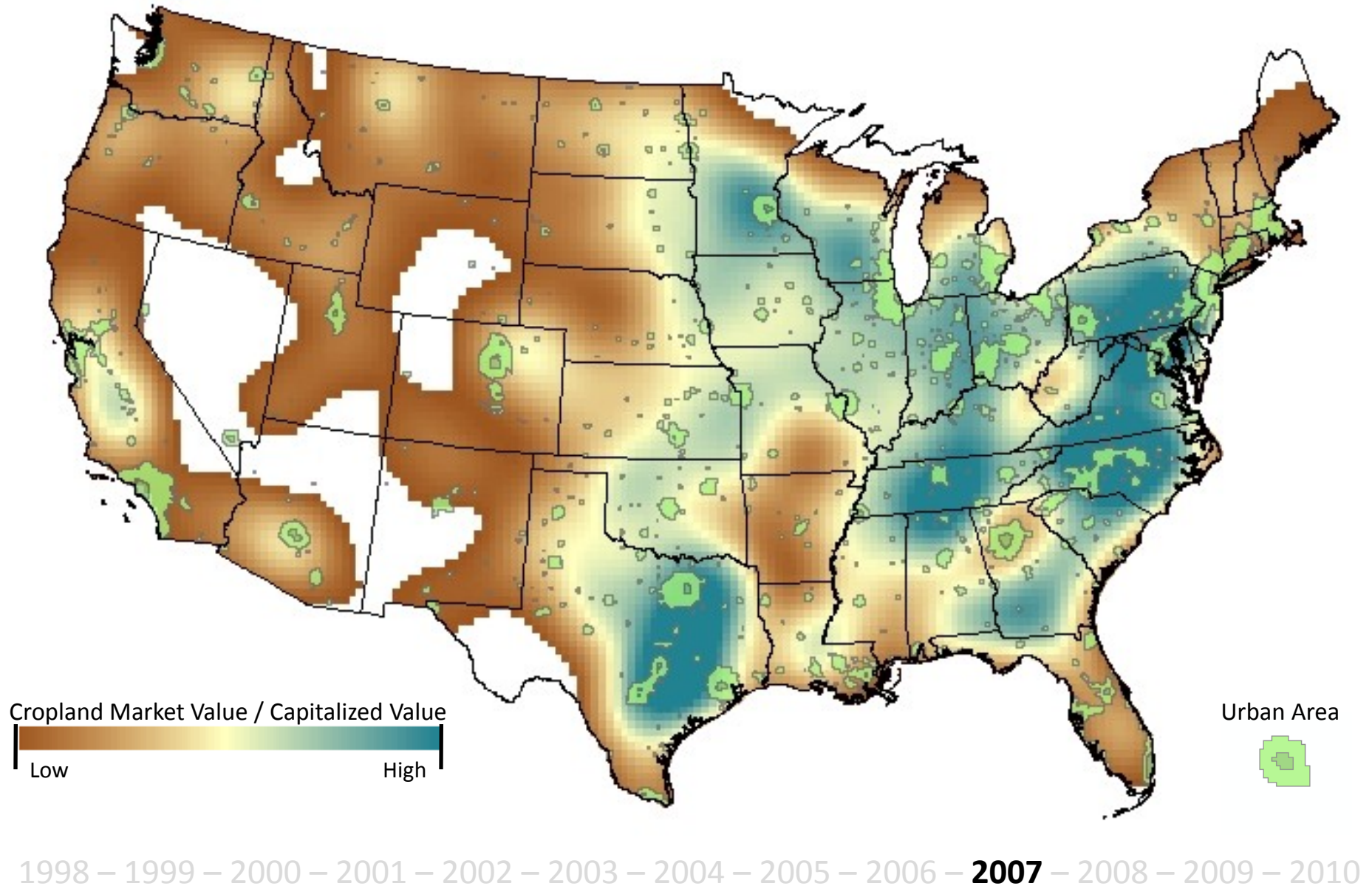
Source: NASS June Area Survey

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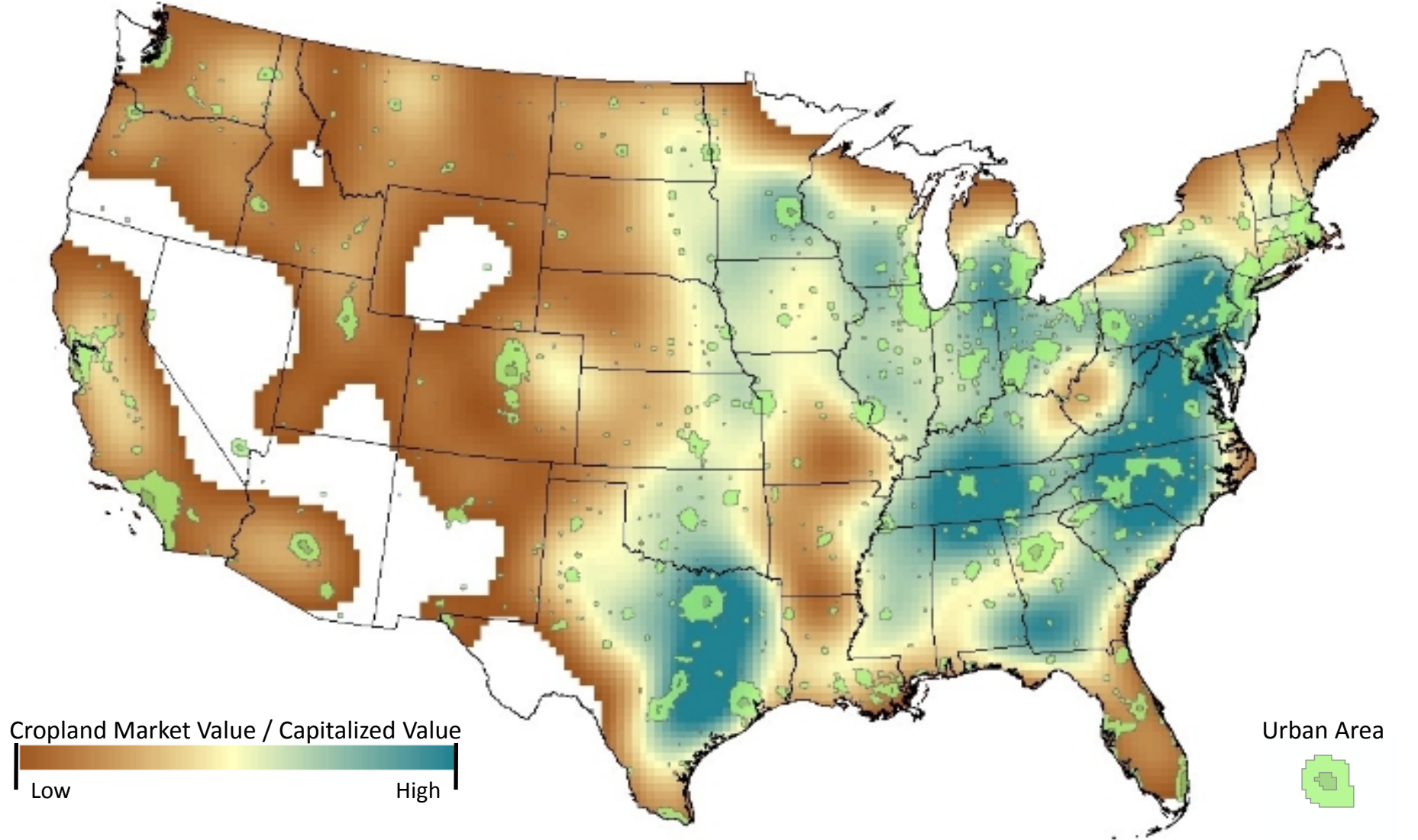
Source: NASS June Area Survey

# Price-to-Rent Ratio for Cropland



Source: NASS June Area Survey

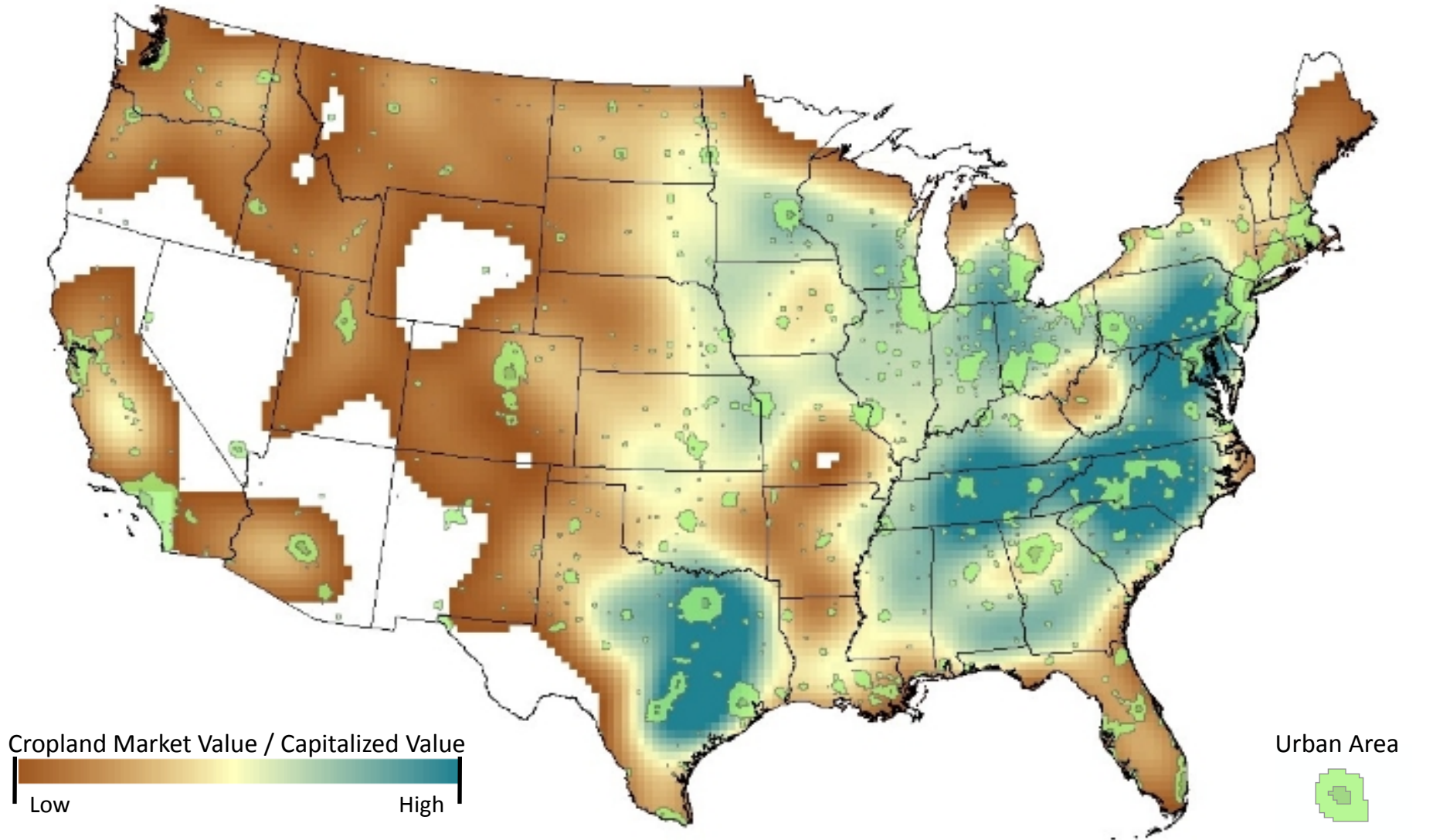
# Price-to-Rent Ratio for Cropland



1998 – 1999 – 2000 – 2001 – 2002 – 2003 – 2004 – 2005 – 2006 – 2007 – **2008** – 2009 – 2010

Source: NASS June Area Survey

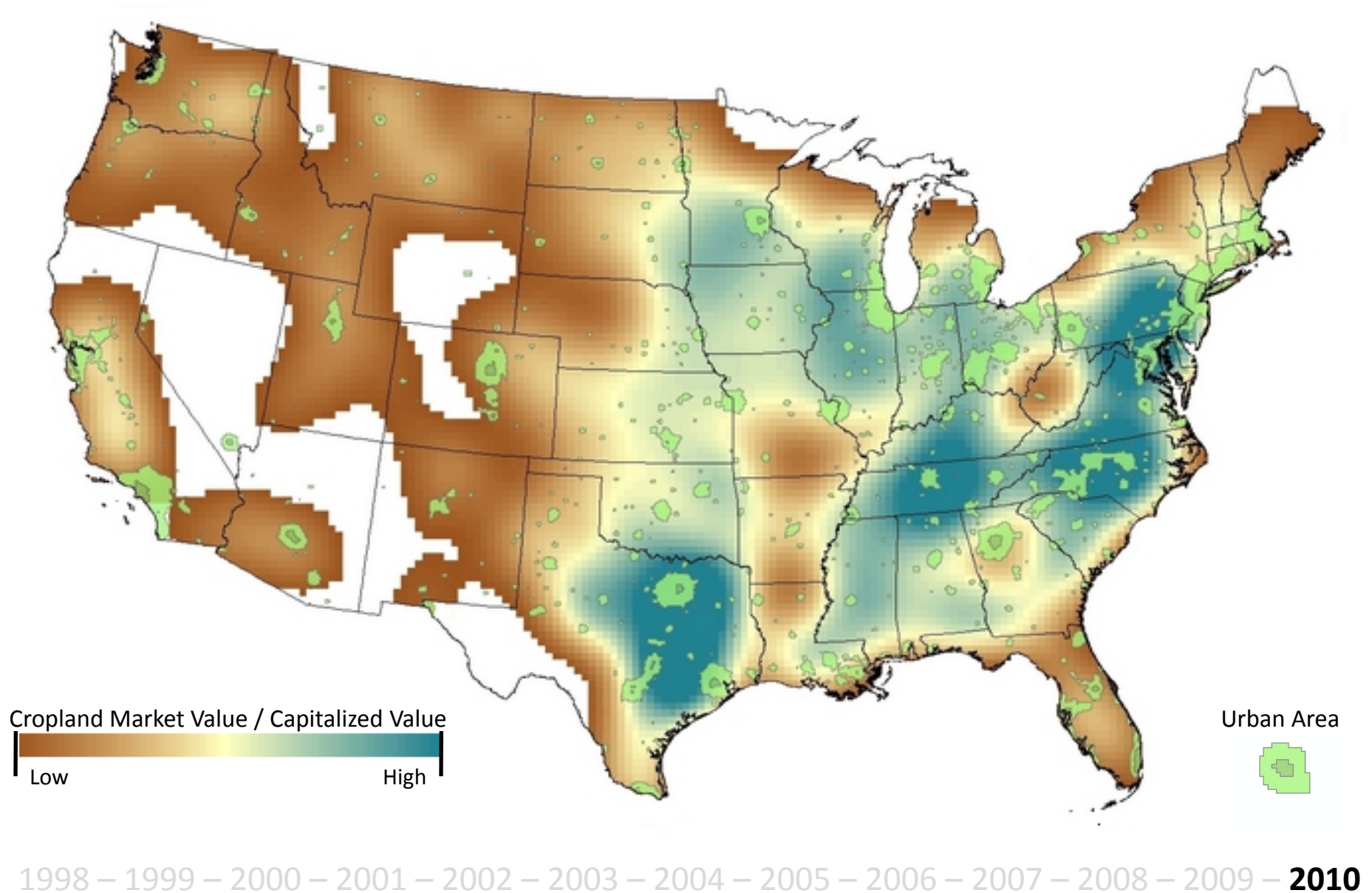
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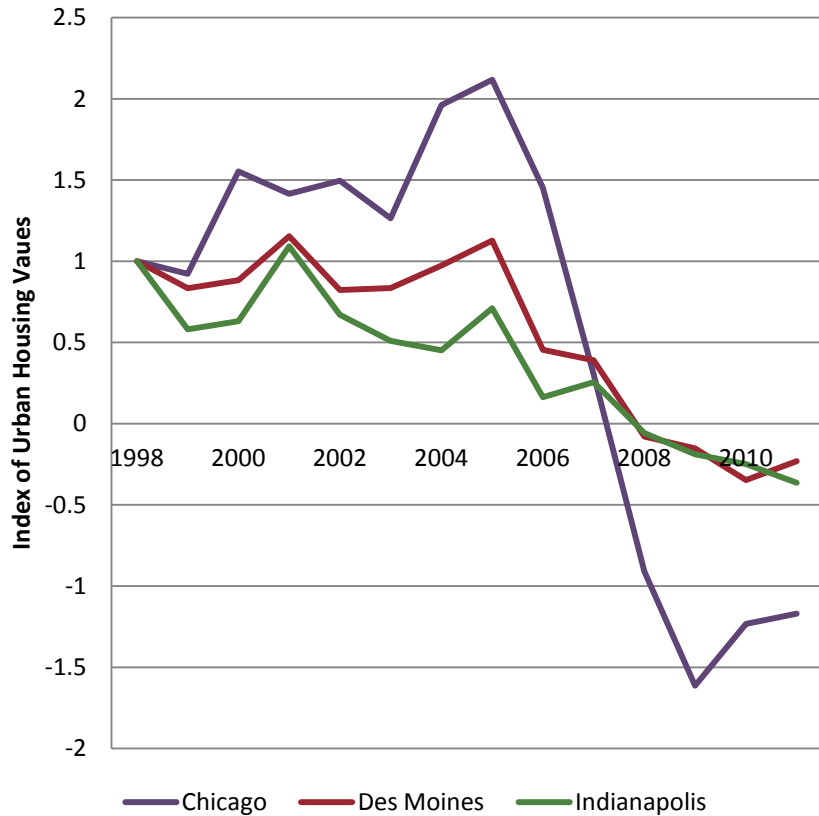
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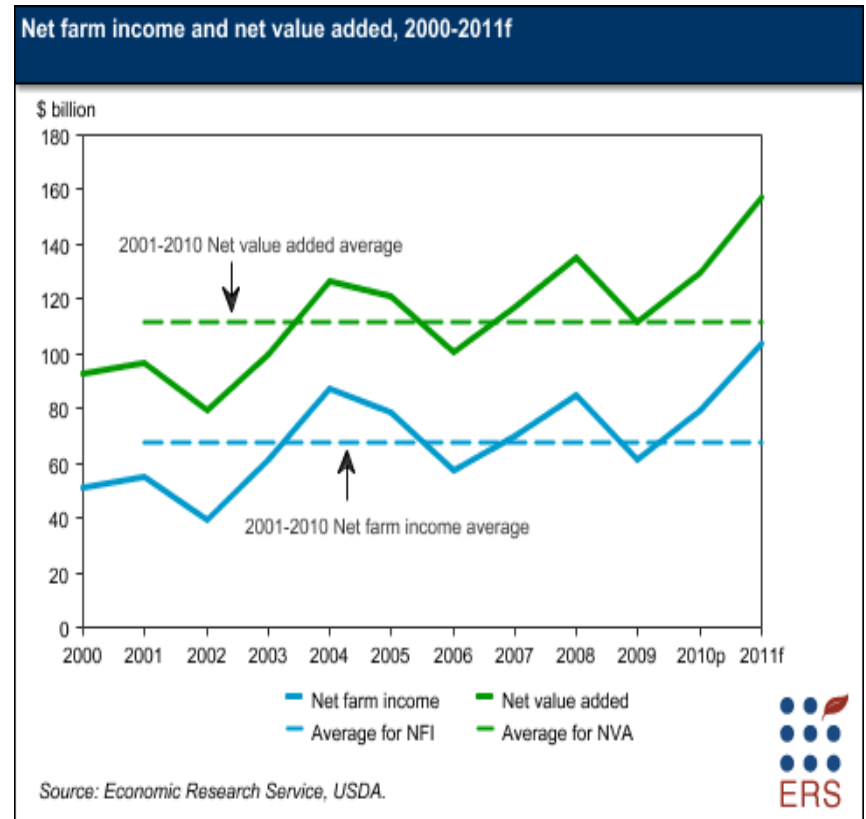
# Housing and Farm Sectors Have Performed Differently

## Urban Real Estate

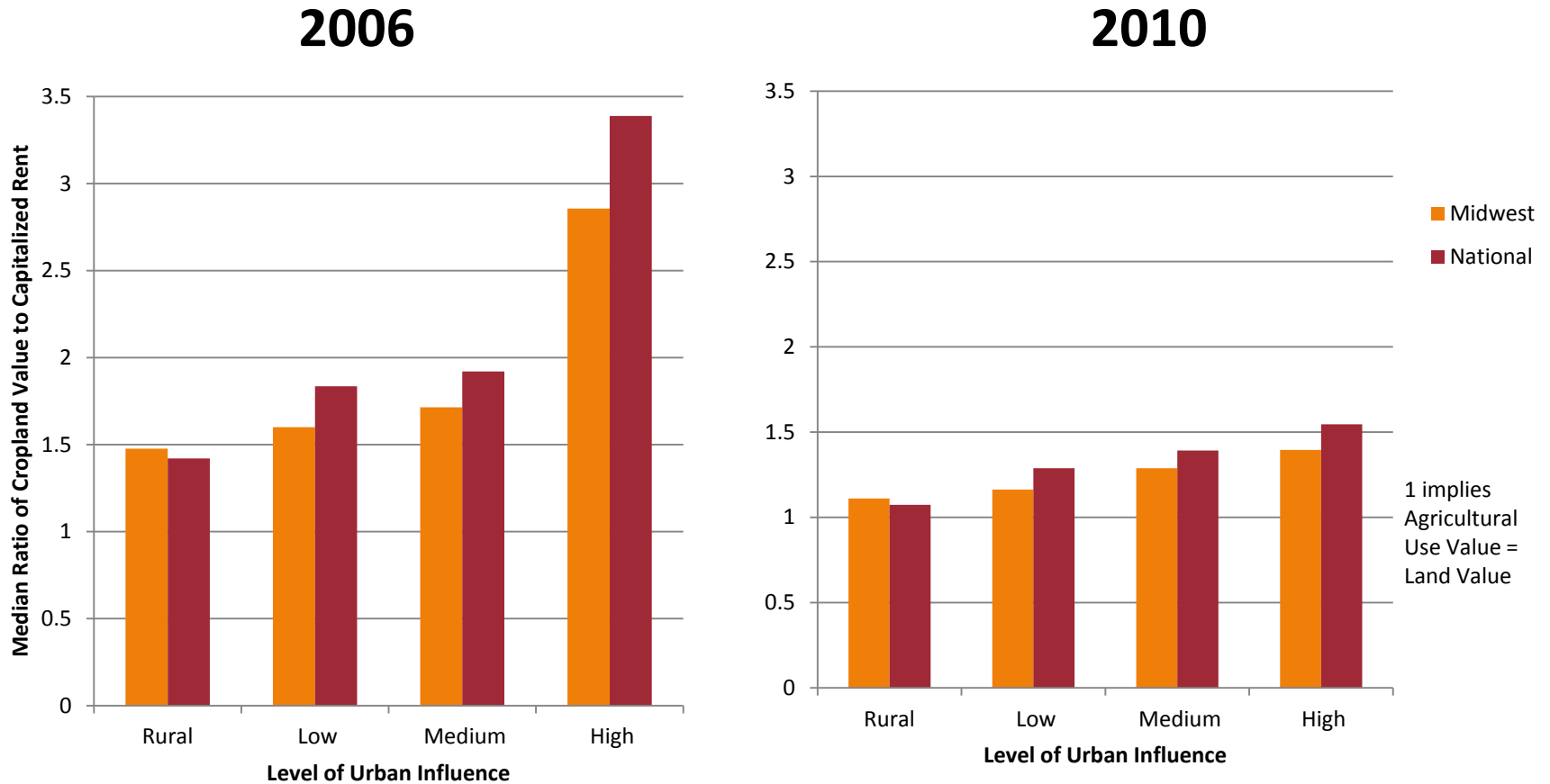


Source: FHFA Housing Price Index, 1998 = 1

## Farm Income

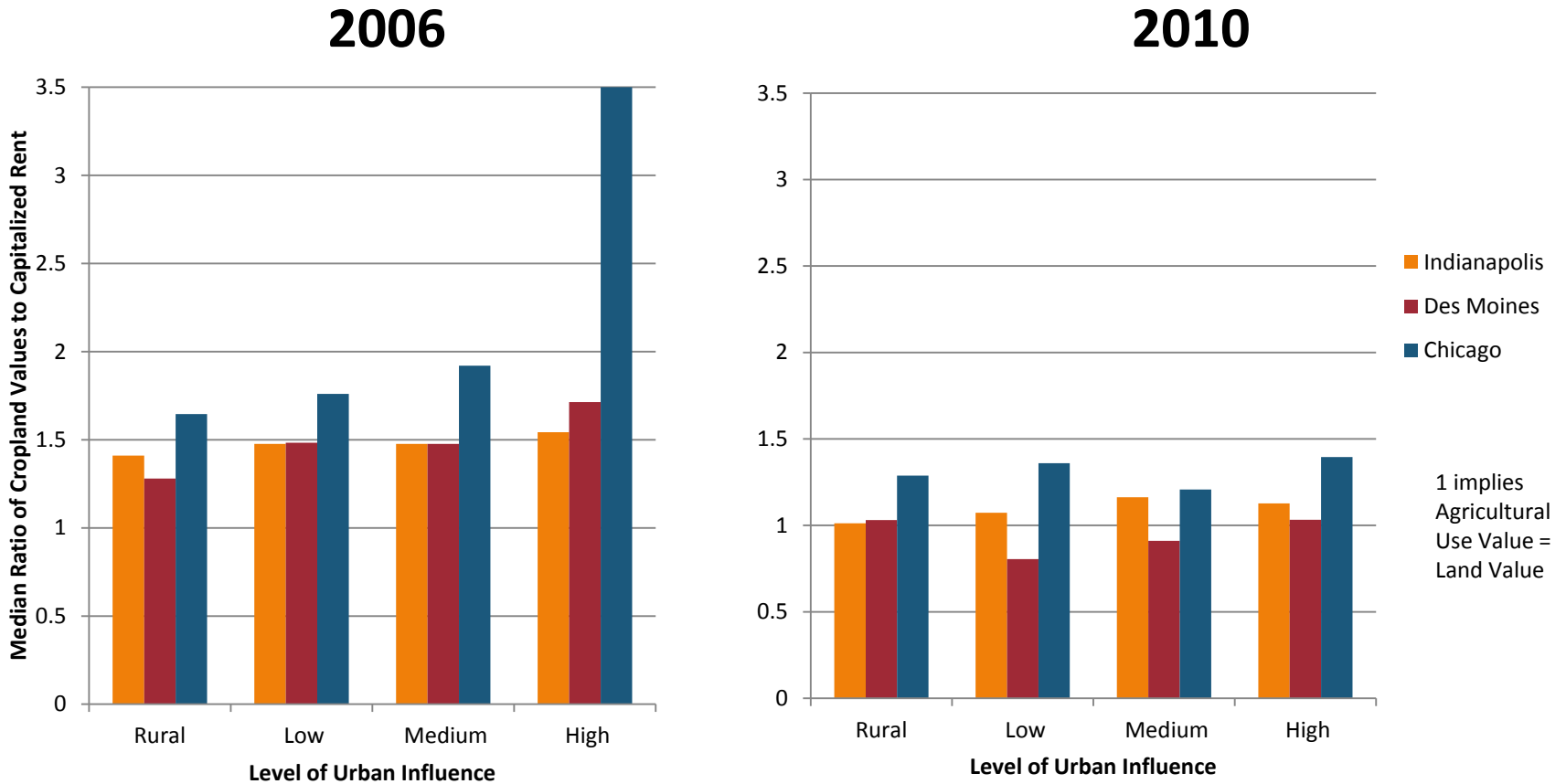


# Value from Urban Influence Declined Drastically



Source: USDA/NASS June Area Survey

# Value from Urban Influence Declined Drastically



Note: Ratio for Chicago in 2006 was 3.8

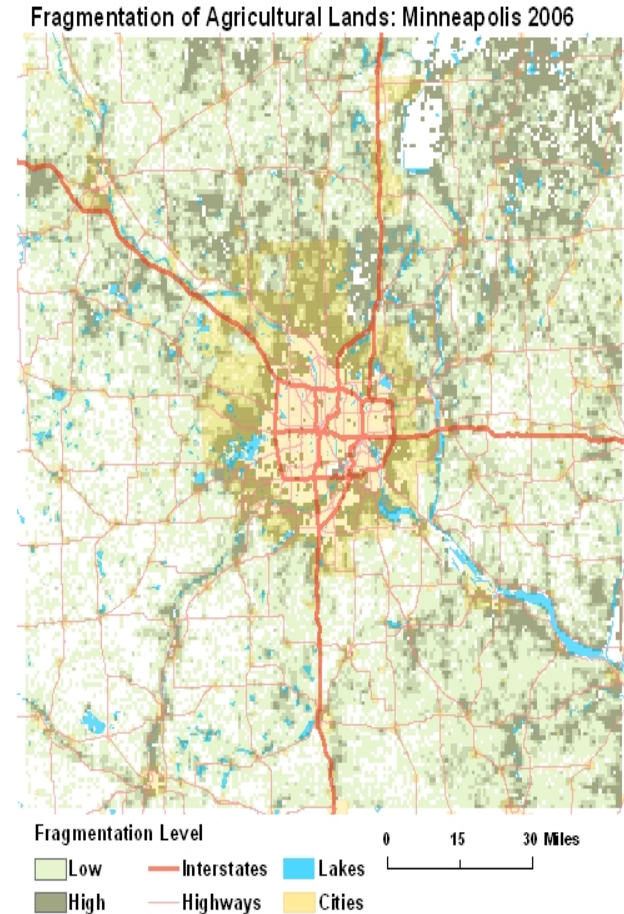
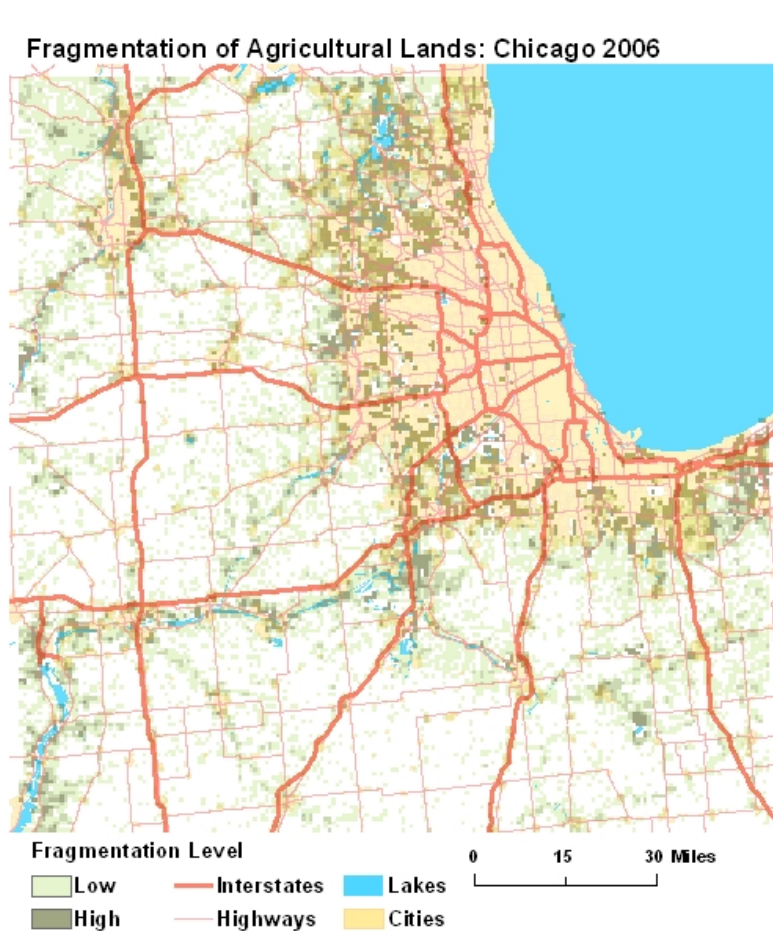
Source: USDA/NASS June Area Survey

# **URBAN INFLUENCE AND LAND USE**

# Urban Influence Alters Land Use Patterns

- Urban sprawl alters the pattern of land use activities
- Farmland near urban areas becomes fragmented
- Both central urban areas and rural areas have more continuous land use
- These patterns are not always systematic around an urban core

# Land Use Patterns Vary Around Urban Centers



Source: ERS analysis of the 2006 National Land Cover Database

# Conclusion

- In the Midwest the value from urban influence is decreasing and urban influence is not a contributor to recent increases in farmland values
  - The situation is very different from 5 years ago
- Urban areas have a heterogeneous impact on farmland values
  - Patterns of influence vary by city