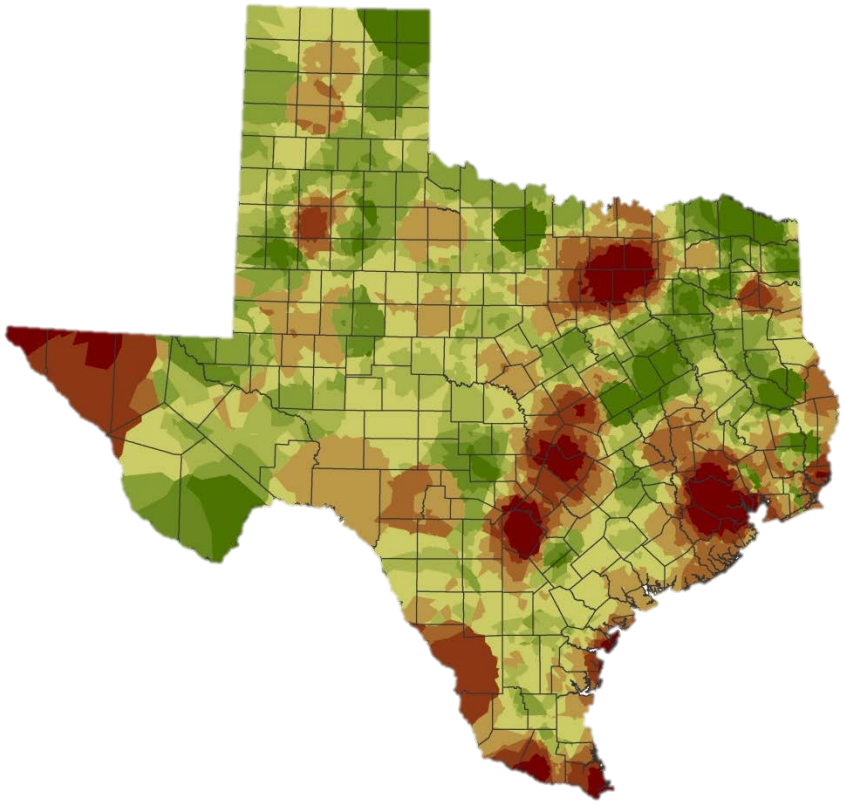
TEXAS A&M UNIVERSITY
AGRICULTURE & LIFE SCIENCES

TEXAS A&M AGRILIFE RESEARCH | EXTENSION

Texas Land Trends

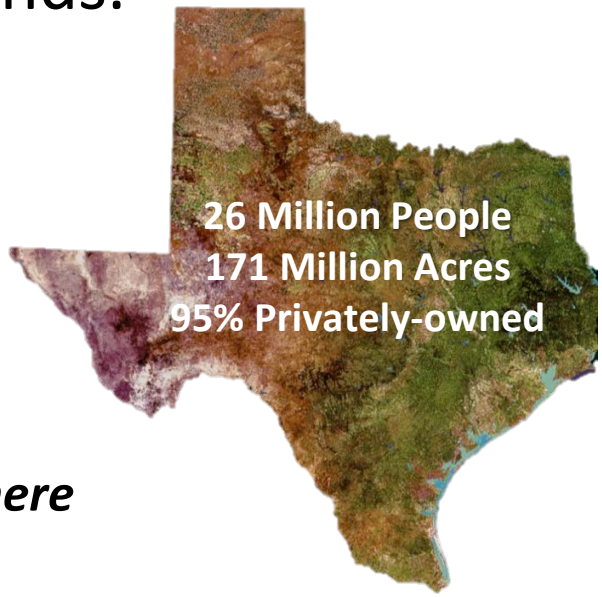


Texas A&M Institute of Renewable Natural Resources
Roel R. Lopez

TEXAS A&M IRNR

Value of Rural Lands

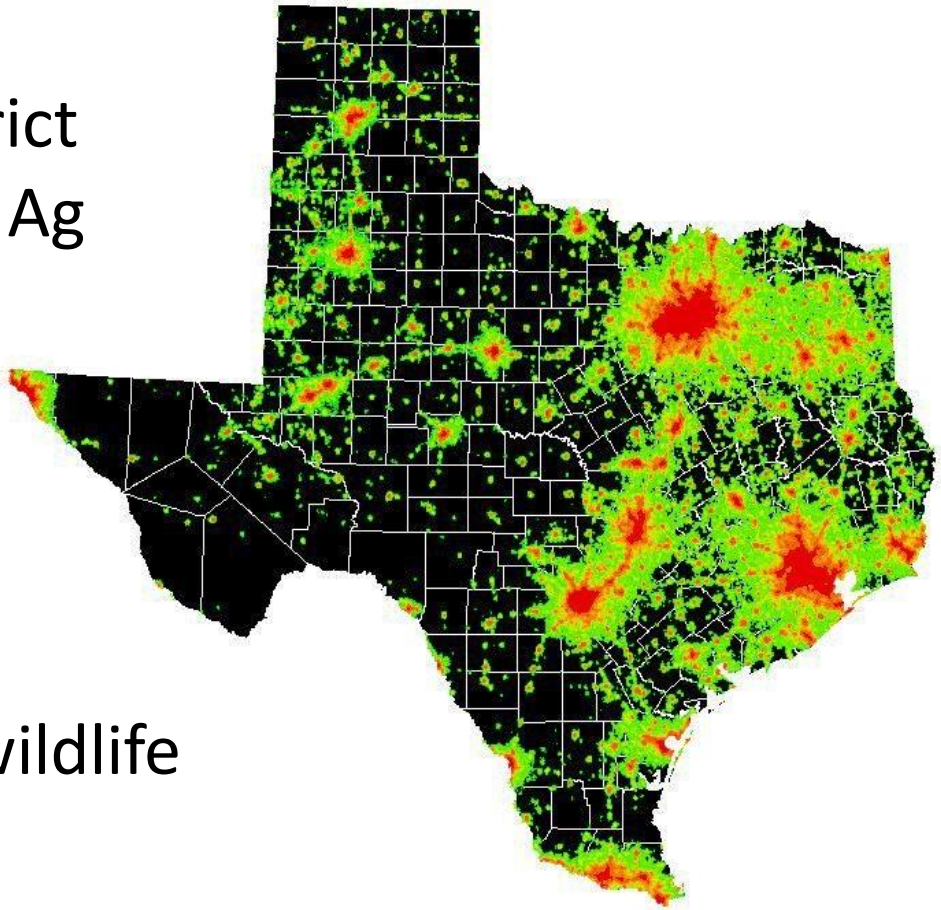
- Rural working lands play an unseen yet critical role in water/food sustainability and national/energy security.
- *Effective* conservation will require innovative solutions to sustaining private rural working lands.
- **Presentation Outline:**
  - Changes in human demographics
  - Changes in land uses/values
  - Linkage to critical issues – *Water*.



"Water conservation starts where the first rain drop falls"

Texas Land Trends – *The Data*

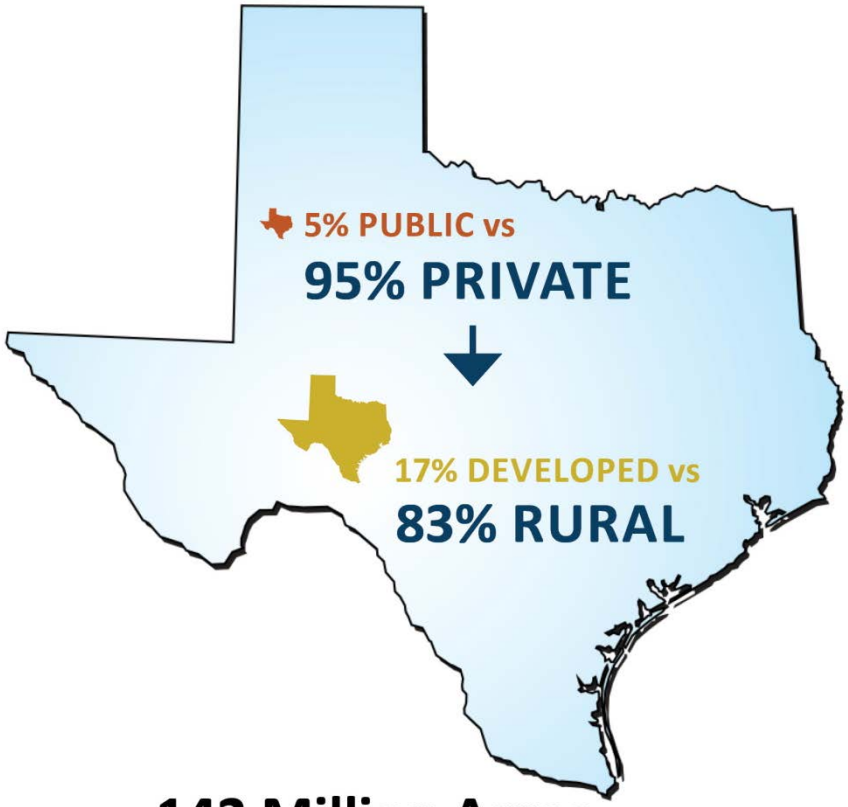
- Trends in land use (1997-2012)
- Primary datasets used
  - County Appraisal District
  - USDA NASS Census of Ag
- Relationships among
  - Land Value
  - Land Ownership
  - Land Use
- ***Working Lands*** – farms, ranches, family forests, wildlife (e.g., 1D, 1D1)




CHANGING PEOPLE

Changing Texas

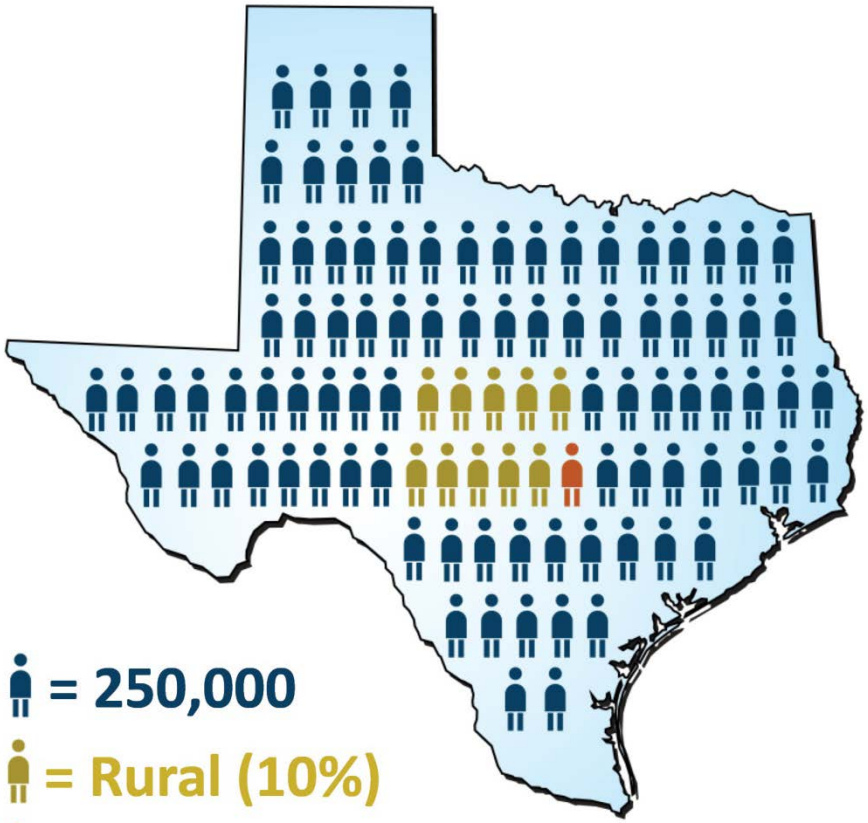
171 Million Acres...



...142 Million Acres

Private Working Lands

Population: 26 Million...



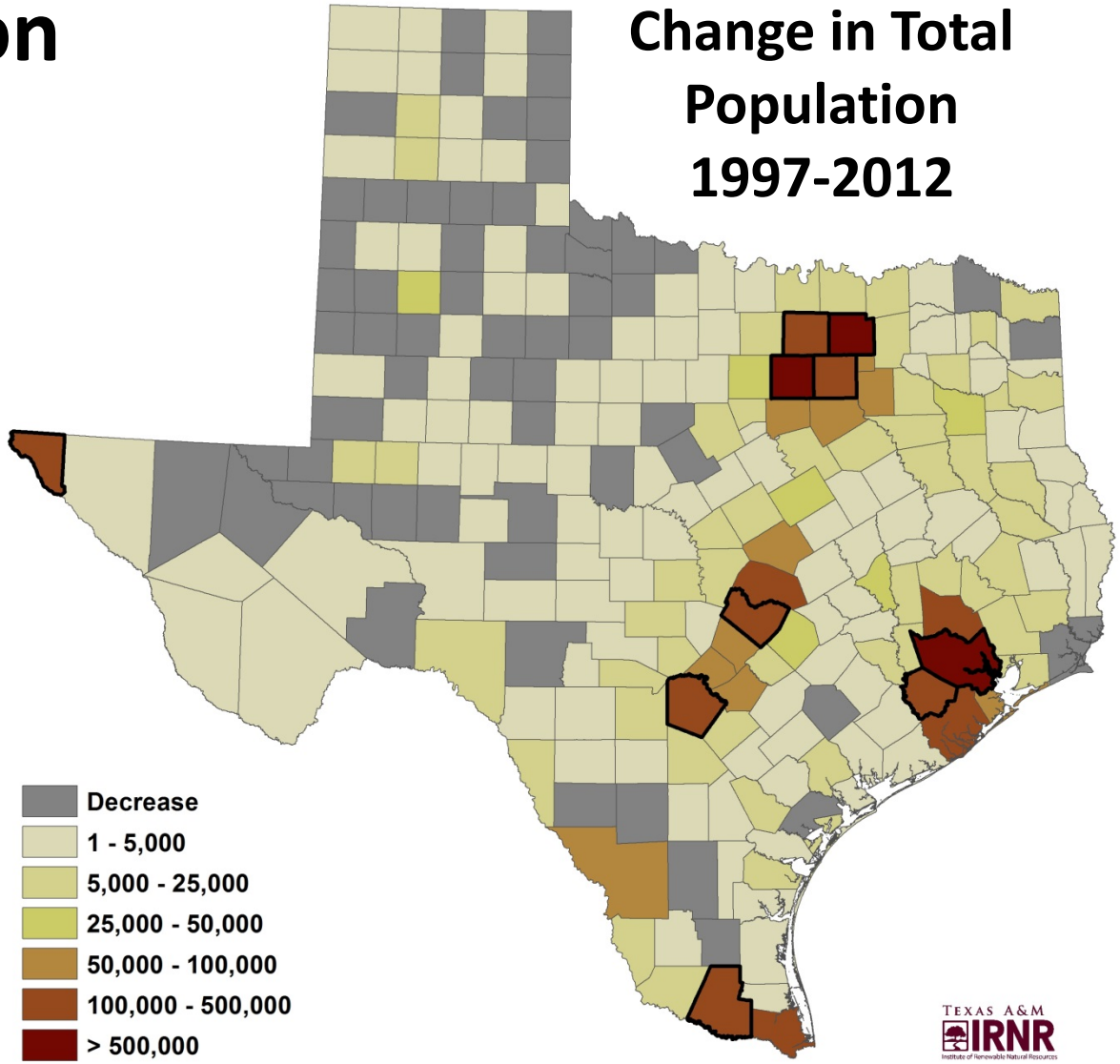
= 250,000

= Rural (10%)

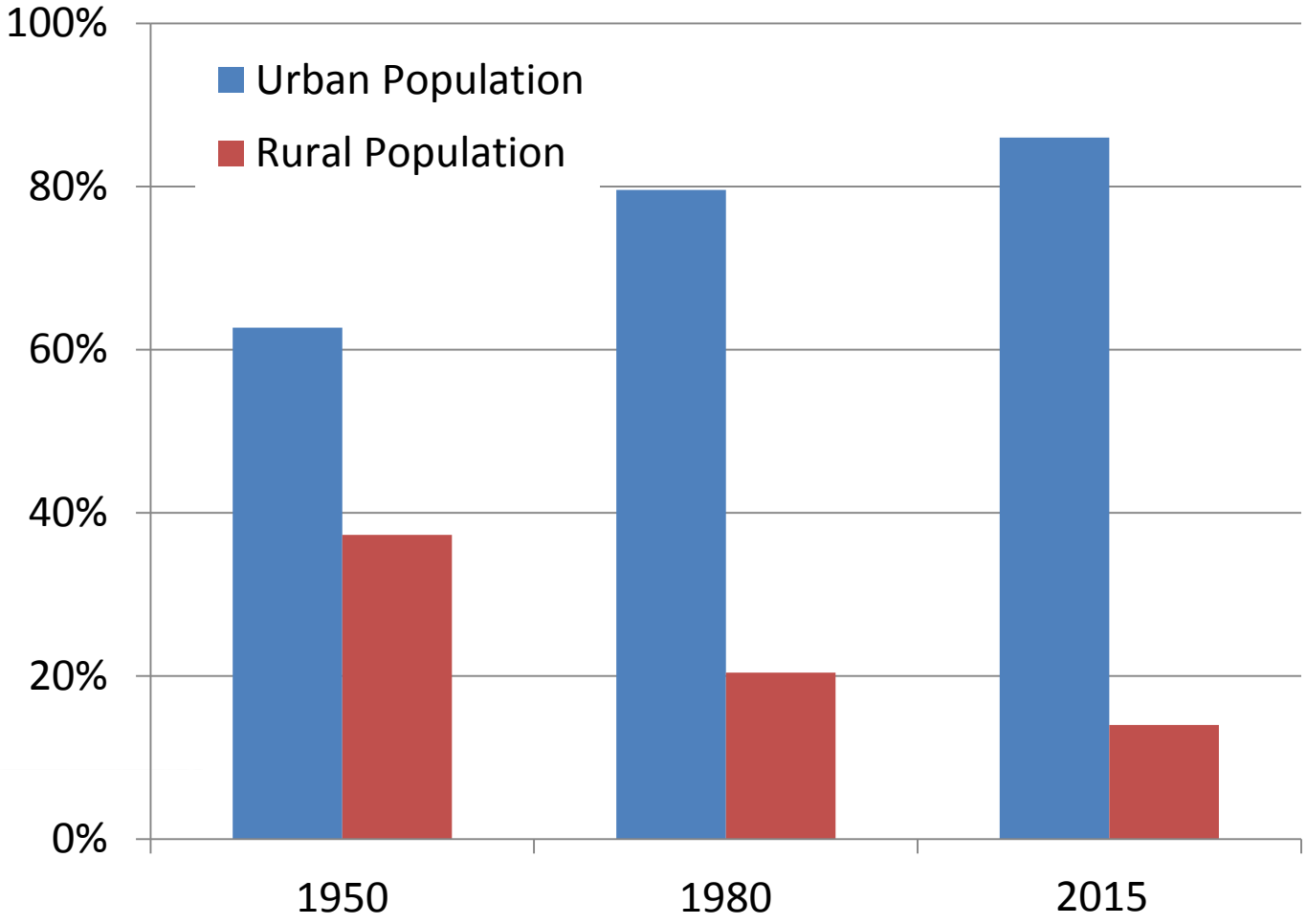
= Landowners (<1%)

Texas Population

- 1997 – 19 Million
- 2012 – 26 Million
- 36% increase
- 500,000/year
- 65% of increase occurred within *Top Ten Populated* Counties

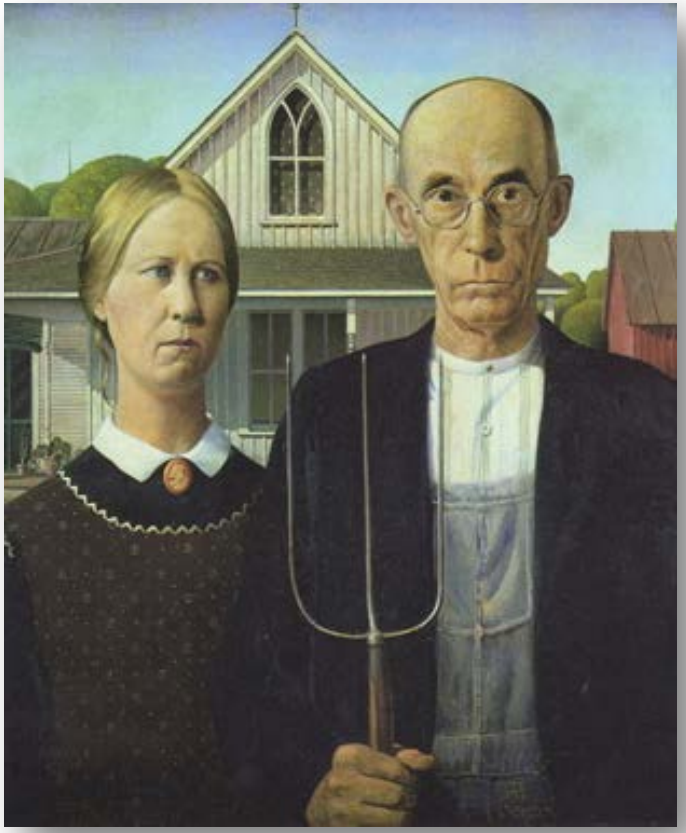


Texas Rural and Urban Populations



Landowner Demographics

- In 2007, the average farmer – 57 years old; average forest landowners – 65 years old.
- During the next two decades, the U.S. will witness the largest intergenerational transfer of rural lands in its history.



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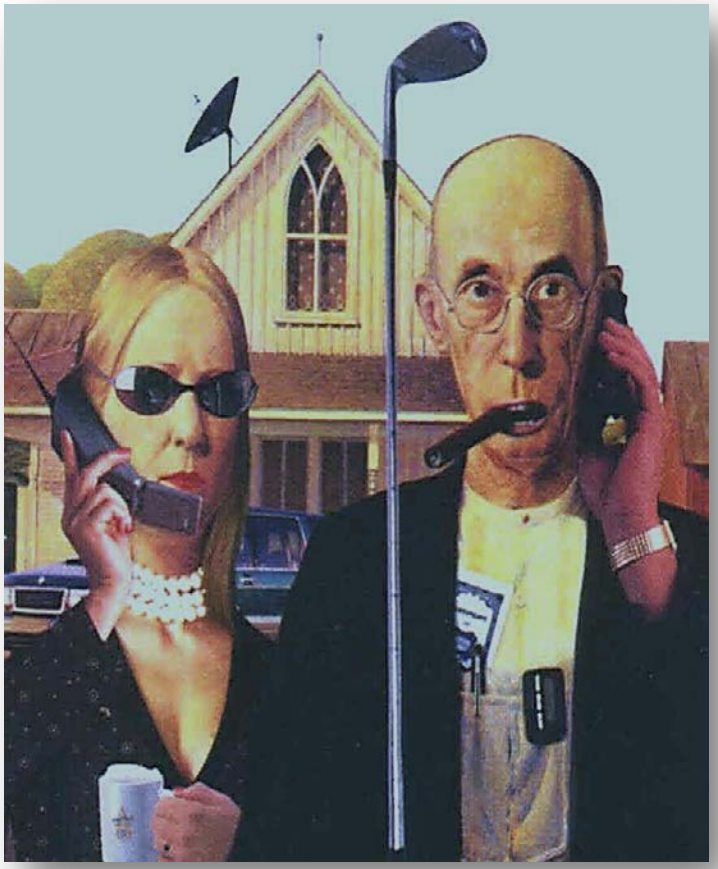
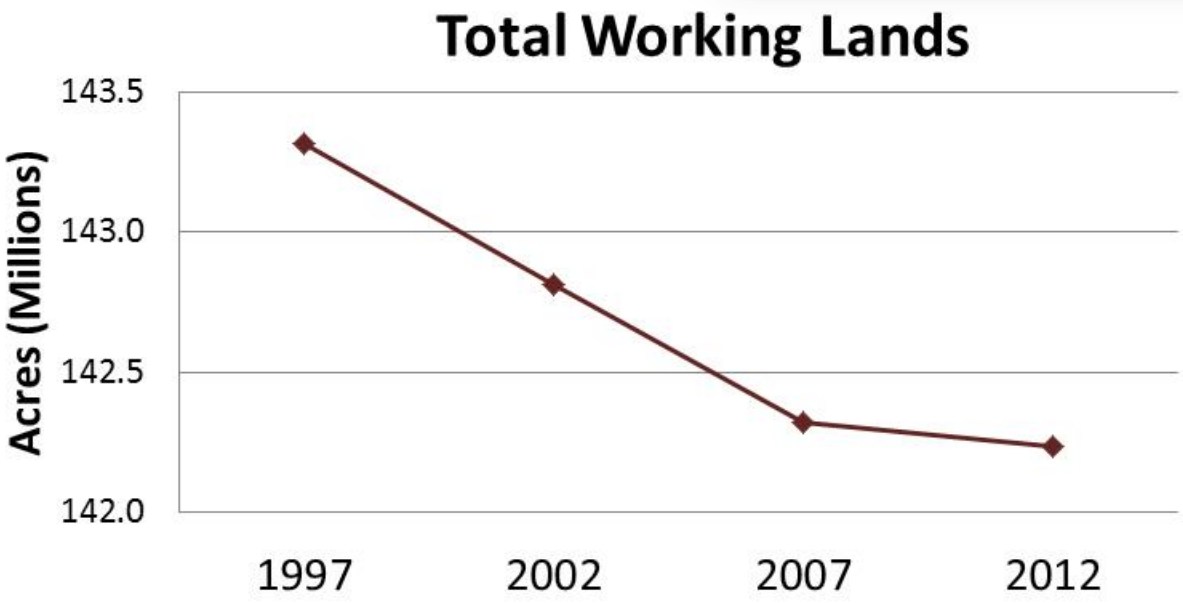



CHANGING…PLACES

Working Land Loss

- 1997 – 143 Million acres
- 2012 – 142 Million acres
- Loss ~1 Million acres



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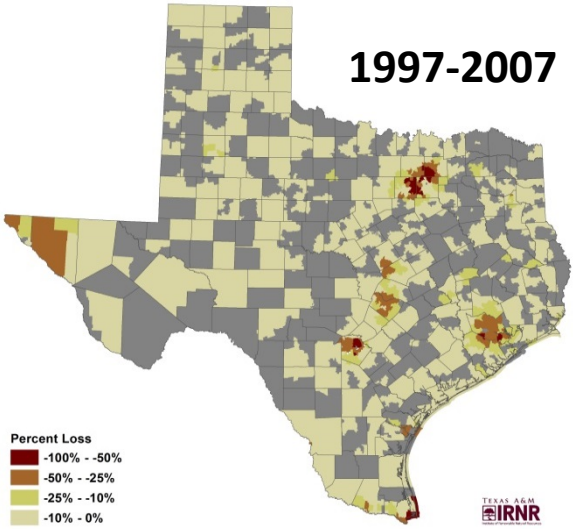
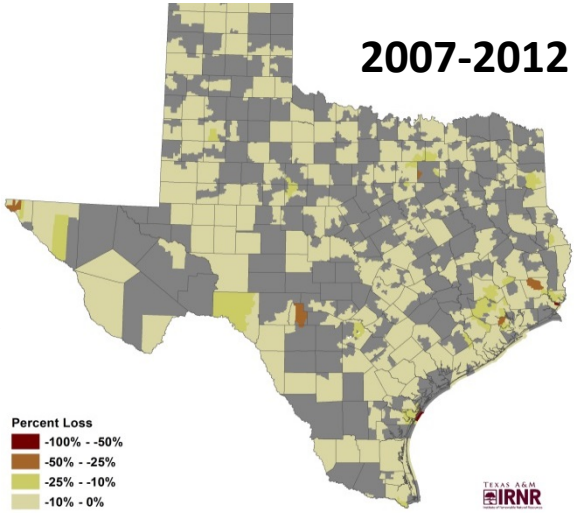
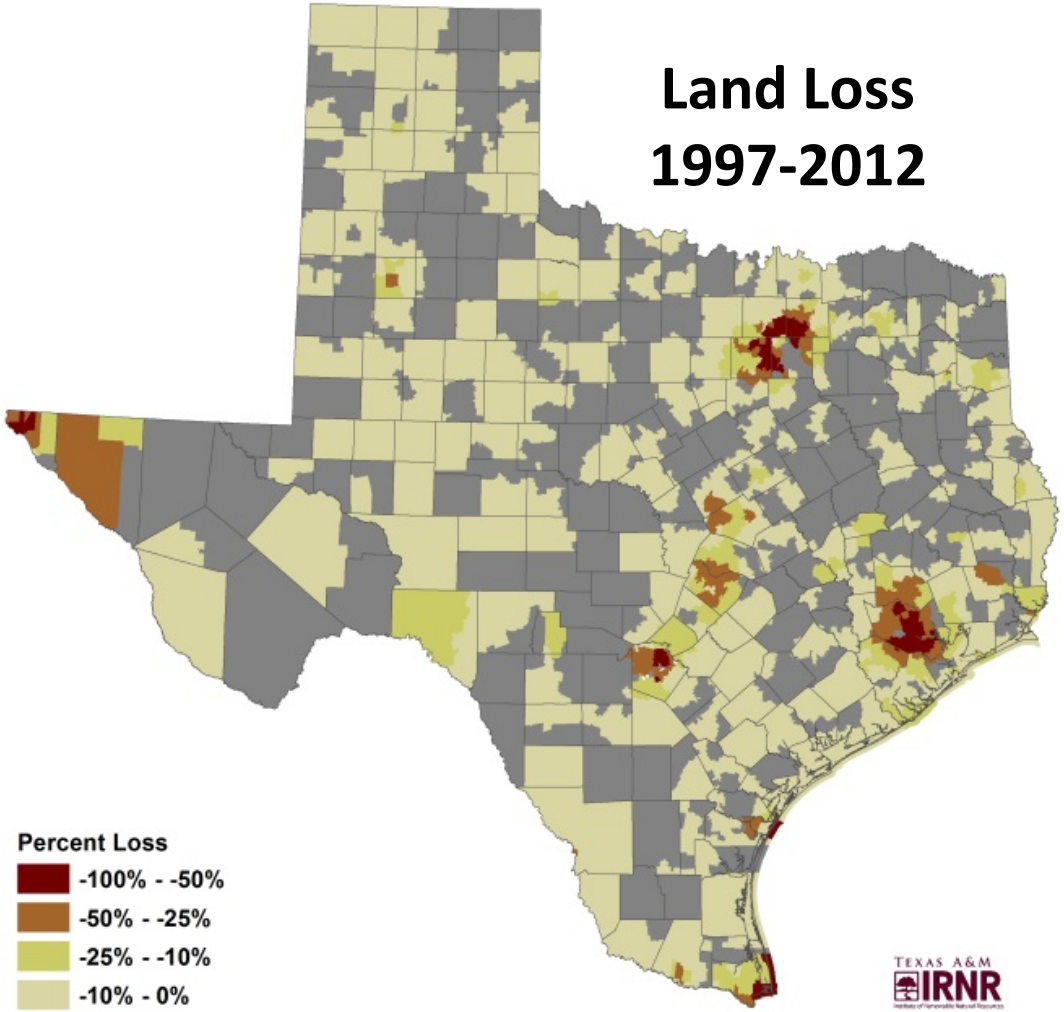
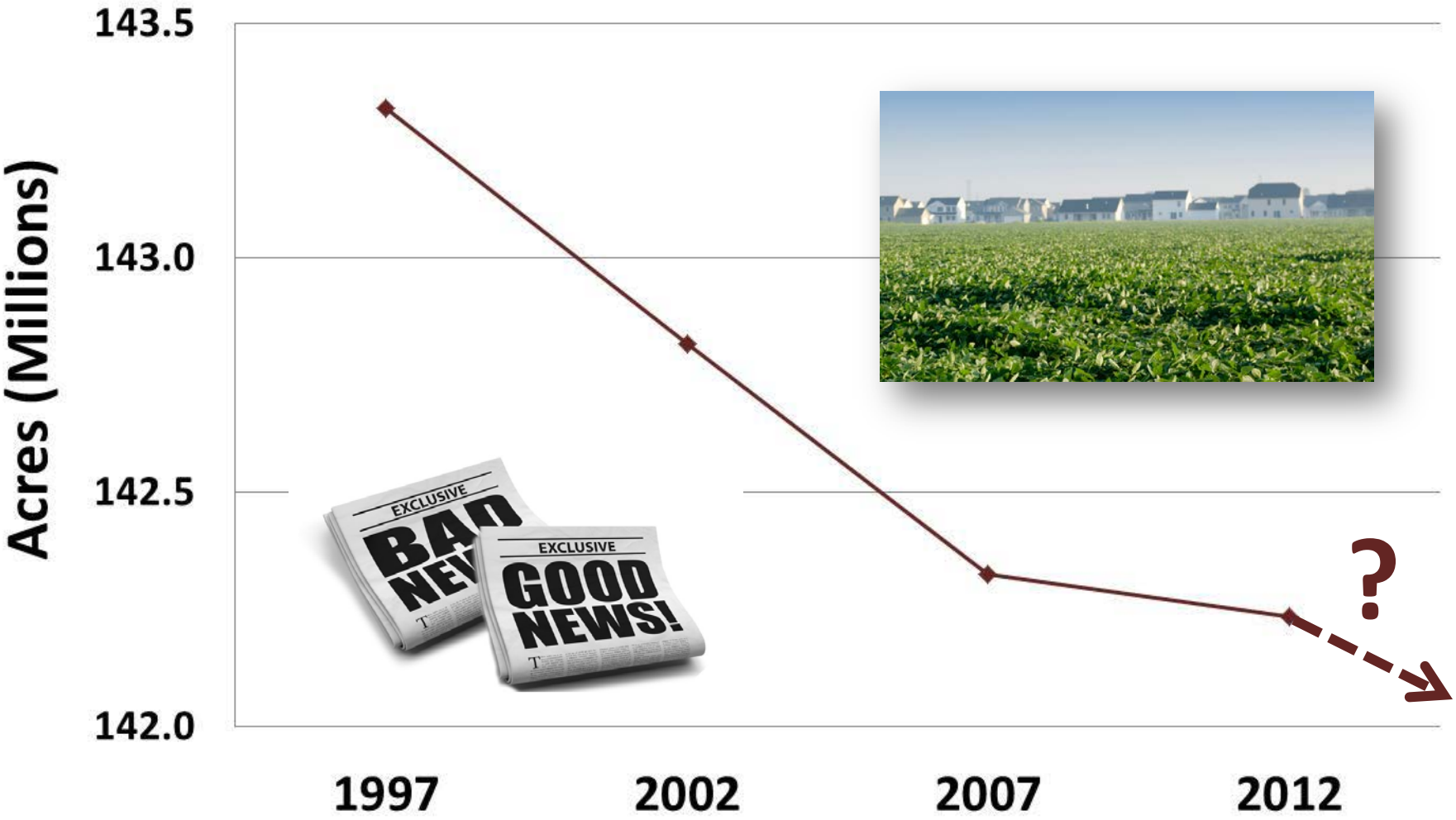






Working Land Loss – *Future*?

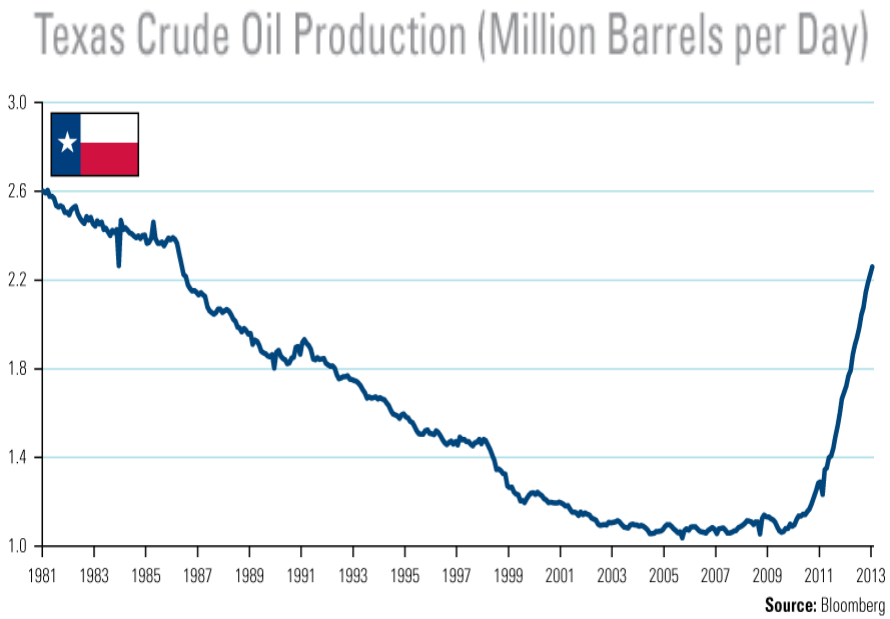



THE GOOD
THE BAD
AND
THE UGLY
ART (C) ZACH BELISSIMO 2008

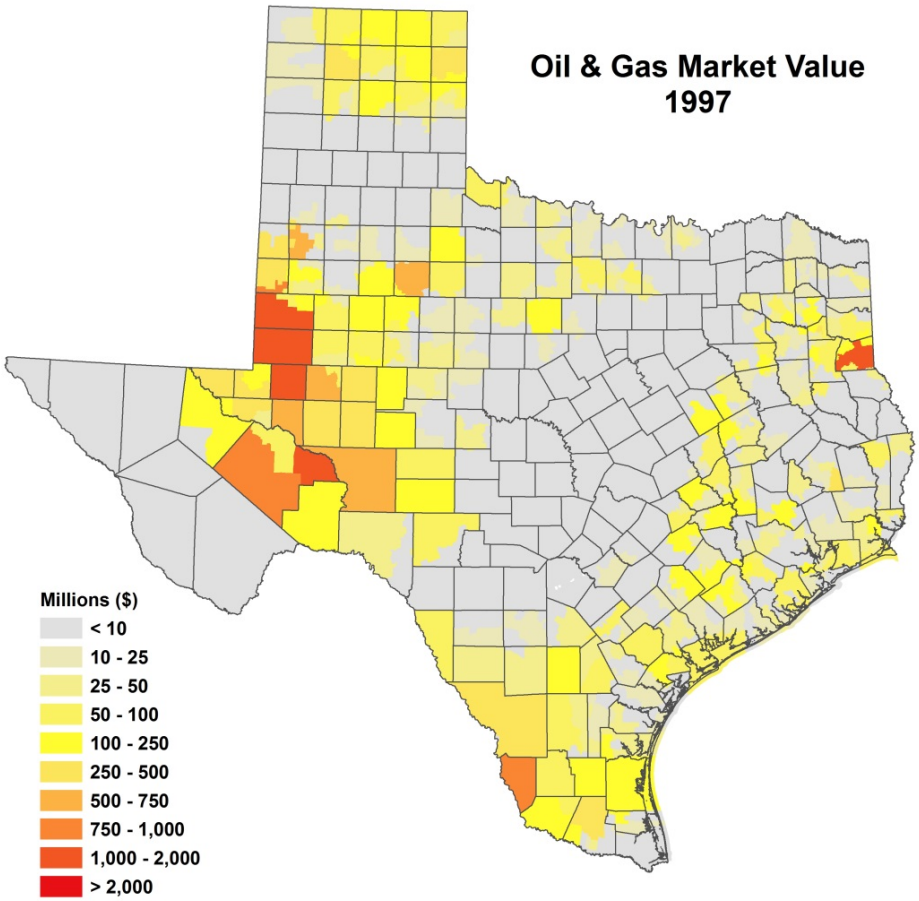
The Good….

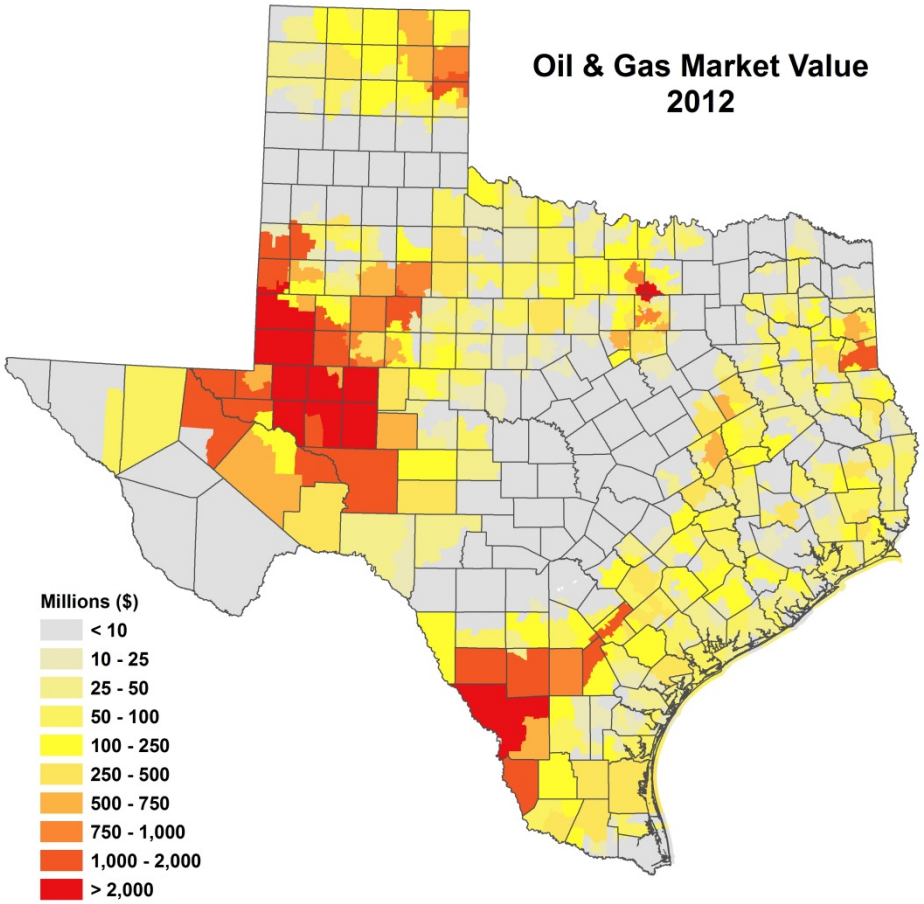
Oil and Gas

- *Game Changer*—Texas is leading crude oil production state in part to 3 large shale gas plays
  - Barnett, Haynesville and Eagle Ford
- U.S. oil production expected to exceed that of Saudi Arabia by 2017
- Eagle Ford Shale Story
  - $87B in revenue (2014)
  - Since 2014, natural gas production has *doubled* and oil production has increased *6X*.



Oil and Gas


Oil & Gas Market Value
1997
Millions ($)
< 10
10 - 25
25 - 50
50 - 100
100 - 250
250 - 500
500 - 750
750 - 1,000
1,000 - 2,000
> 2,000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2012
Millions ($)
< 10
10 - 25
25 - 50
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500 - 750
750 - 1,000
1,000 - 2,000
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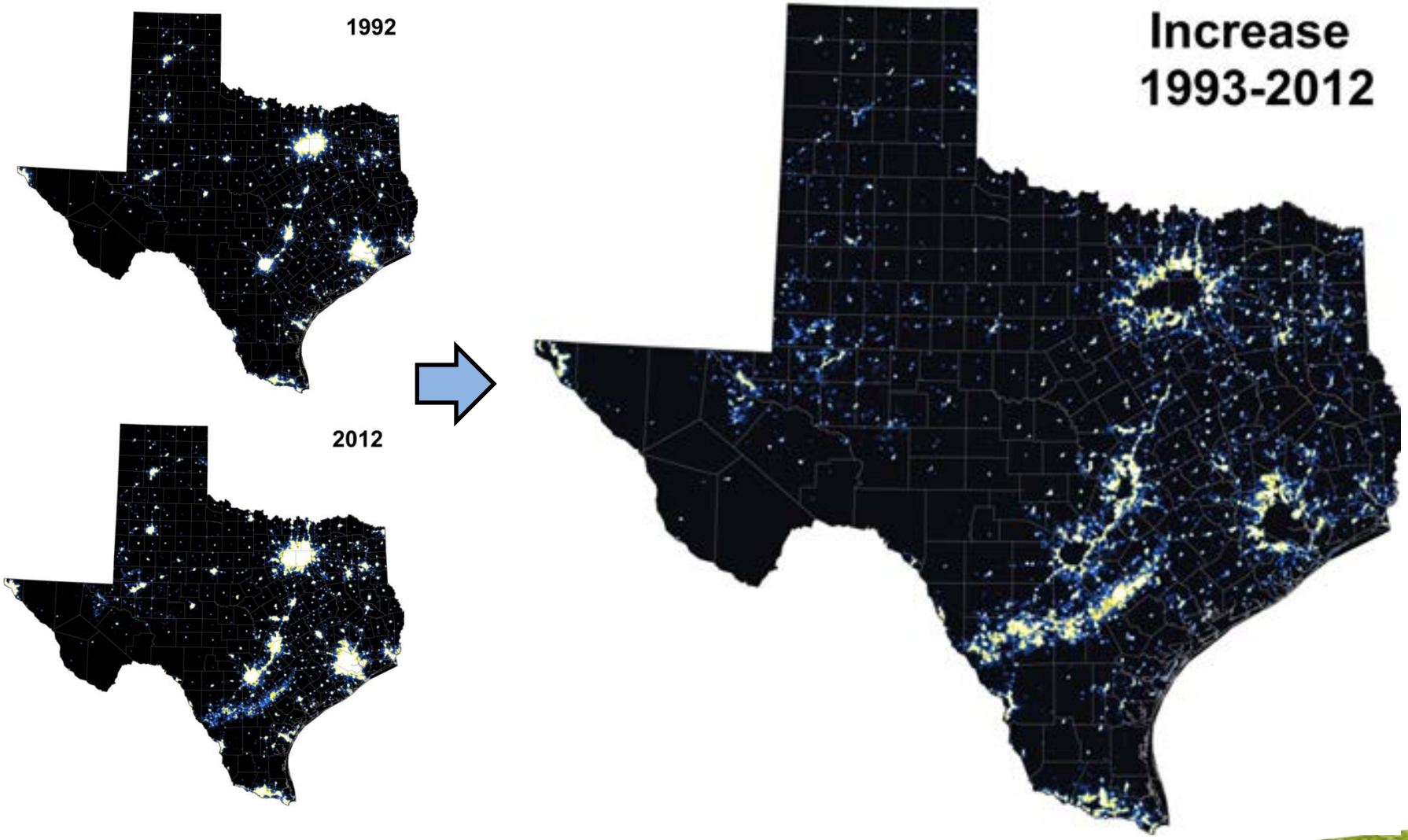
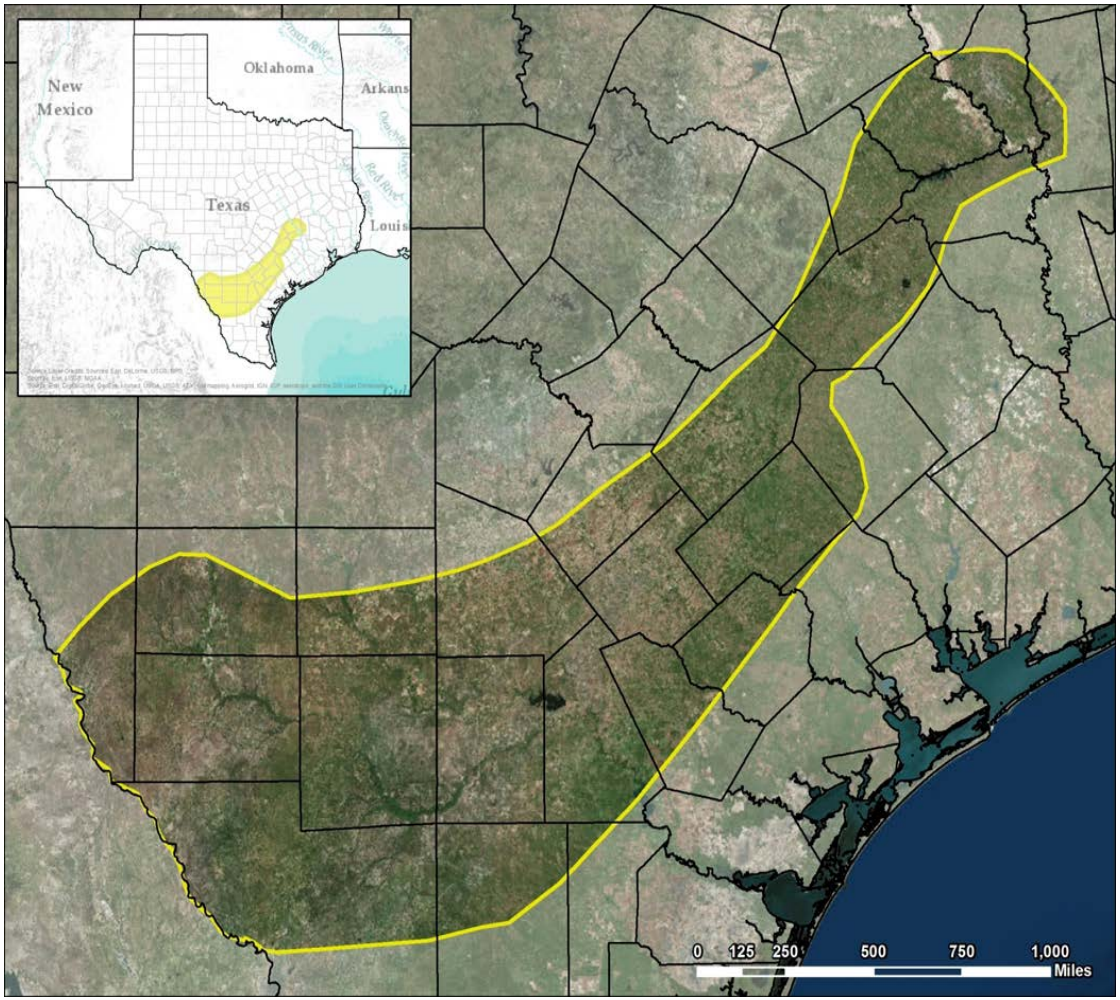
Night Time Illumination



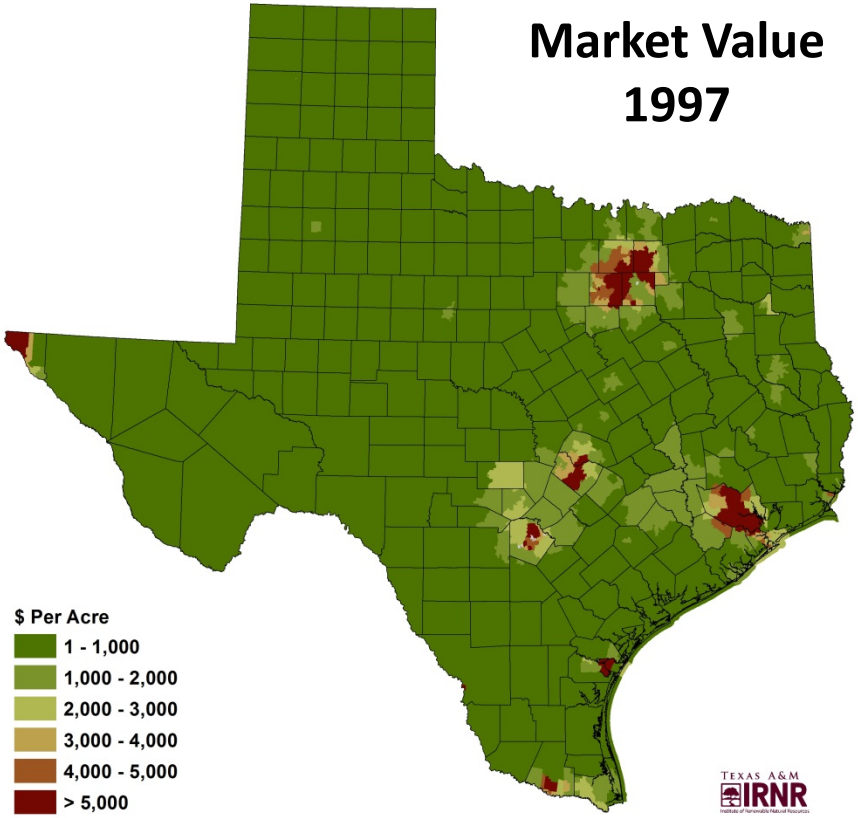
Oil and Gas – *Eagle Ford Shale*

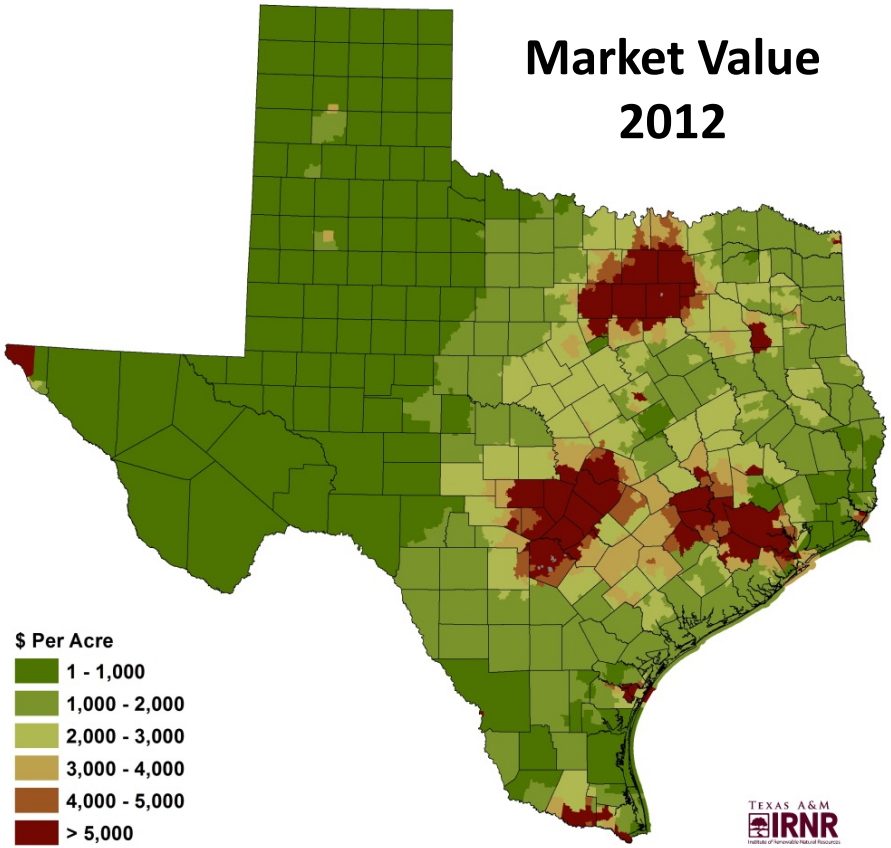
- Landsat 1993-2014 - CDA
- Estimated increase:
  - 23,000 well pads
  - 84,000 acres
  - 65% of construction occurred 2011-2014



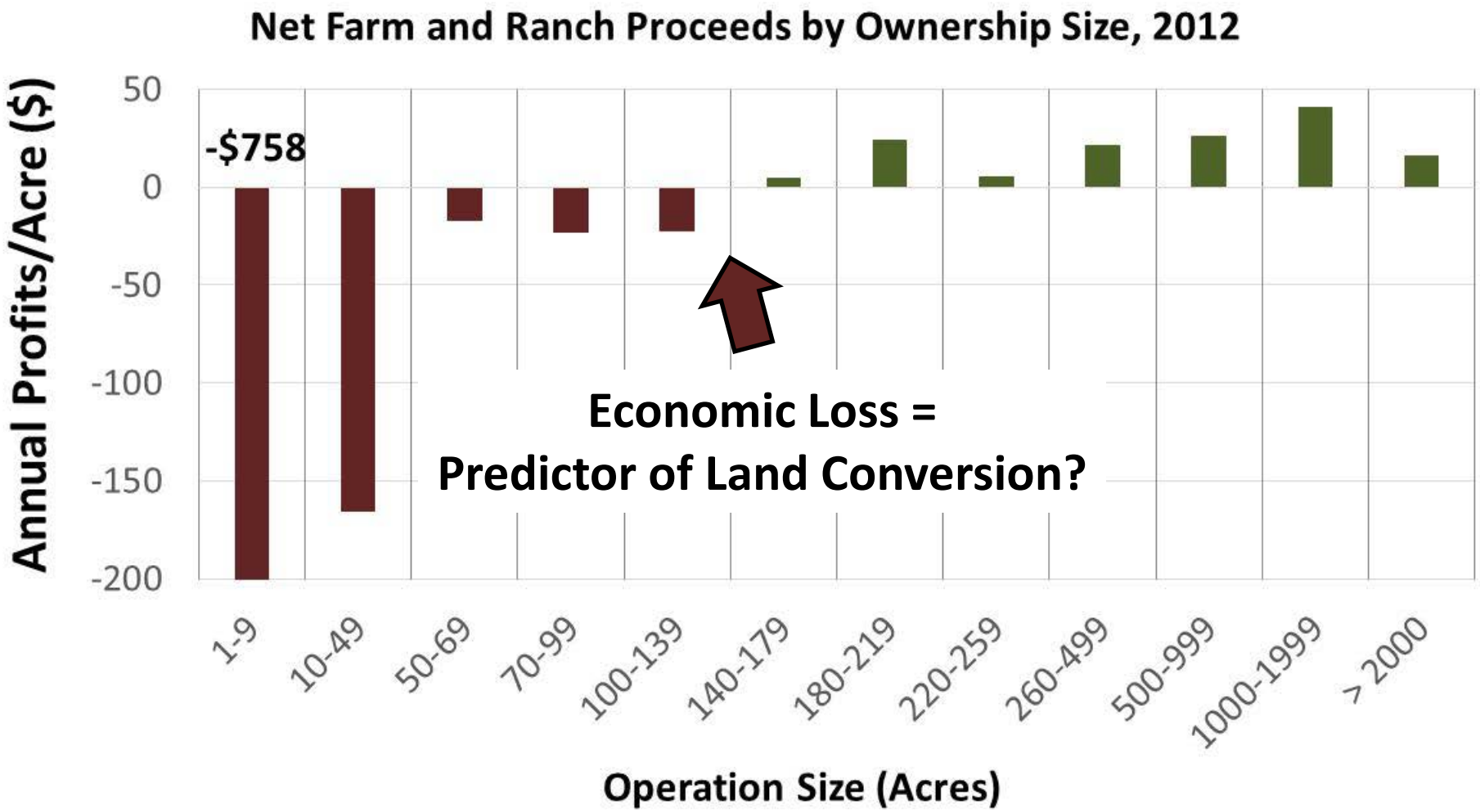
The Bad….

Market Value - *Driver*





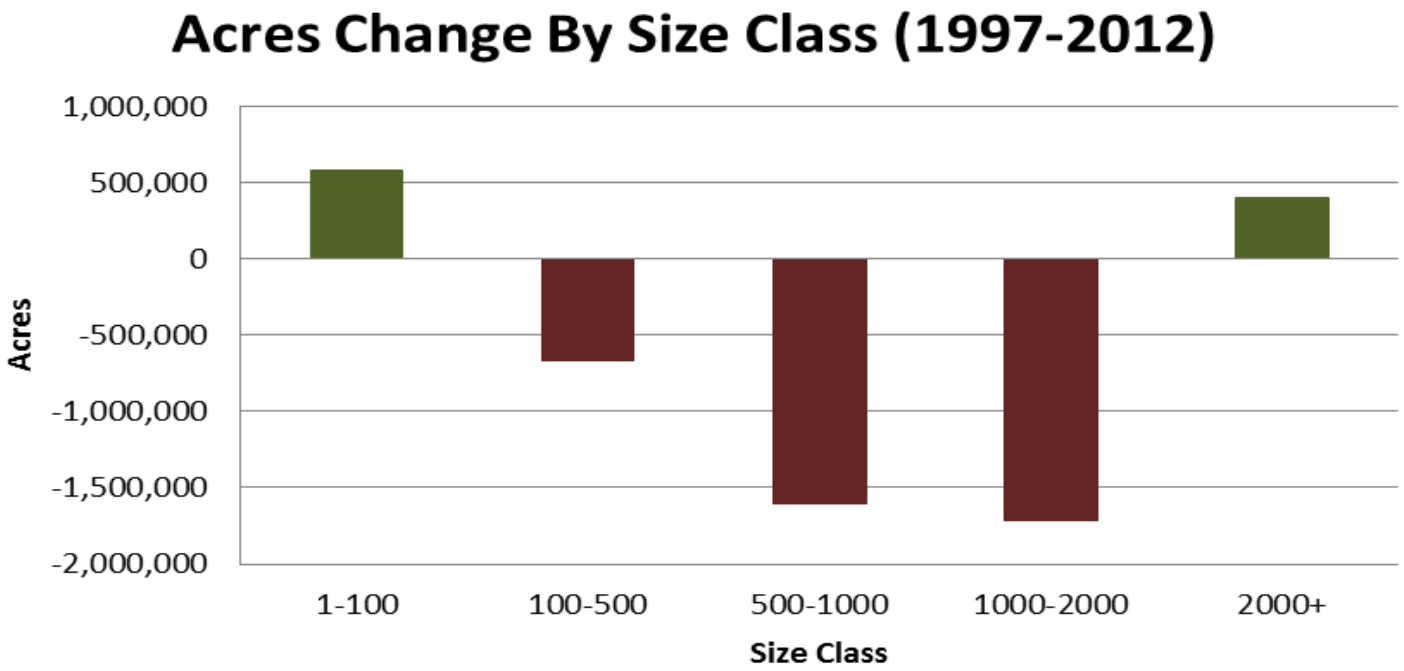
Farm and Ranch Proceeds - *Driver*



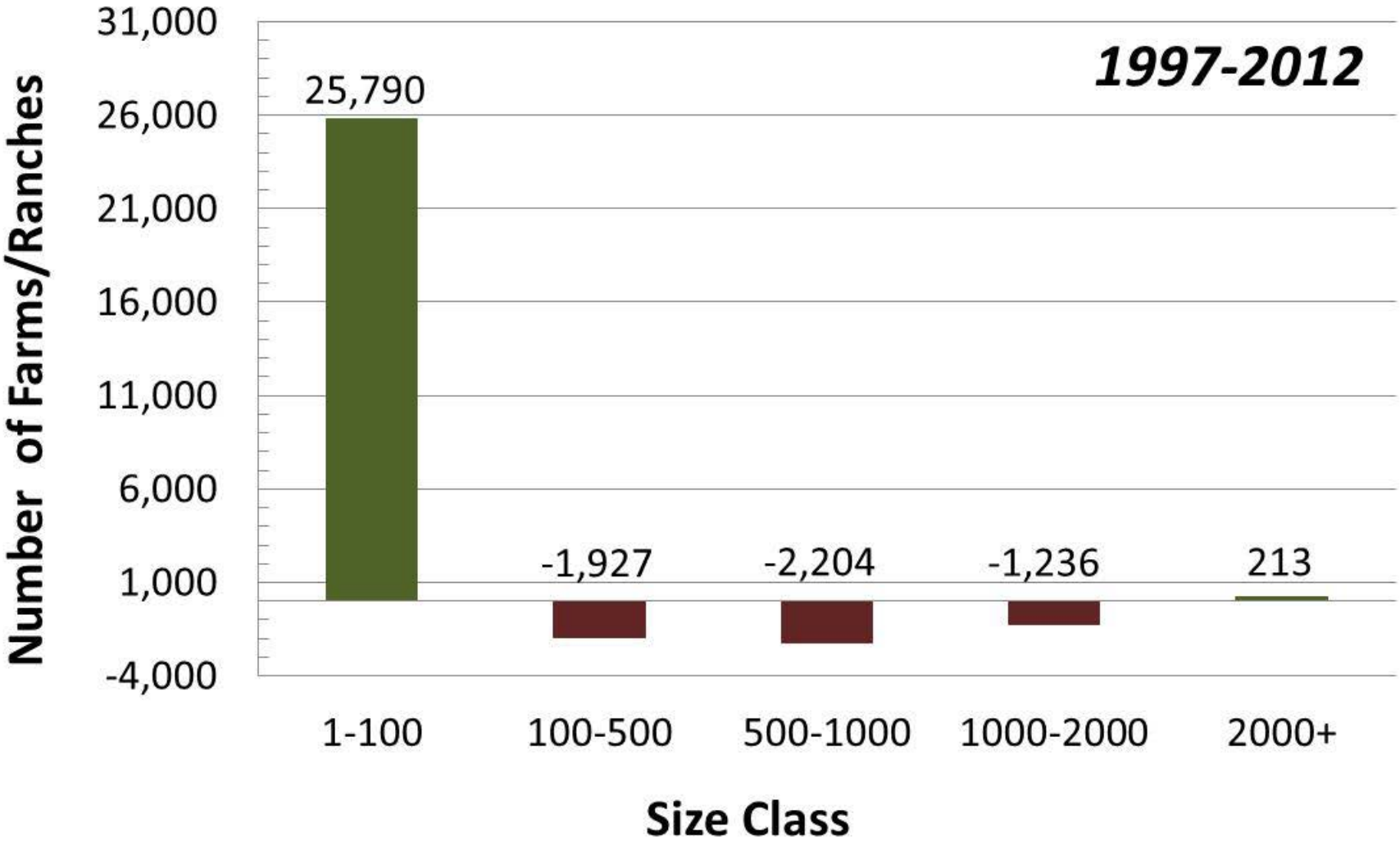
The Ugly….

Ownership Size - *Acres*

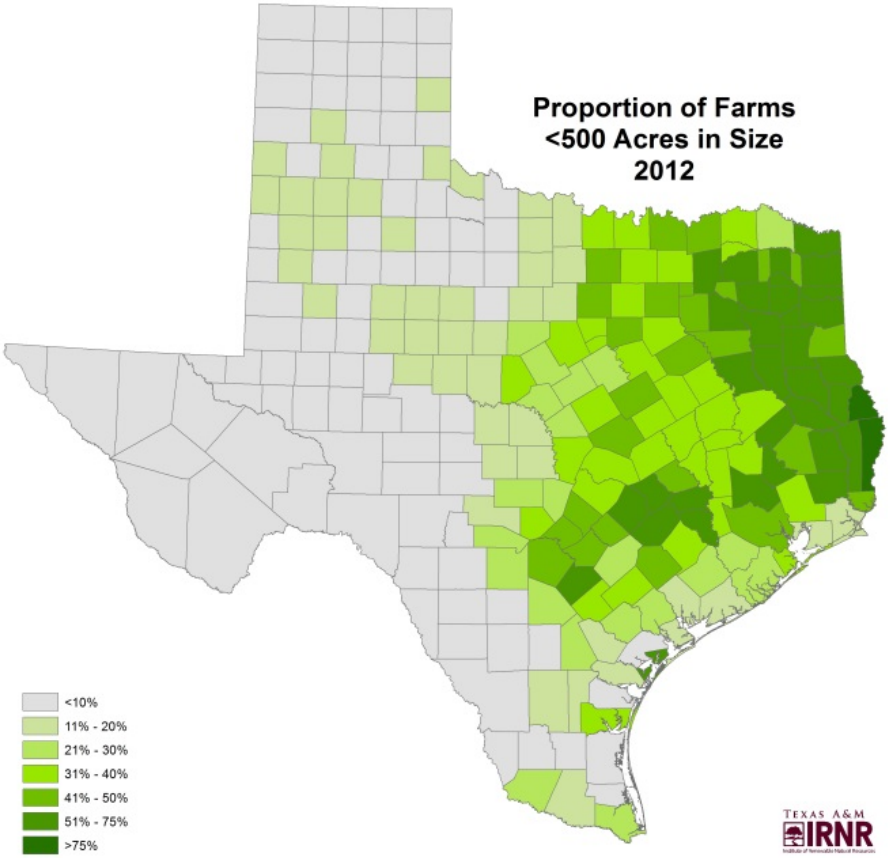
- Ownership size = fragmentation
- Increase (500K acres) of <100 acre farms
- Decrease (4M acres) of 100-2000 acre farms
- Increase (400K acres) of >2000 acre farms

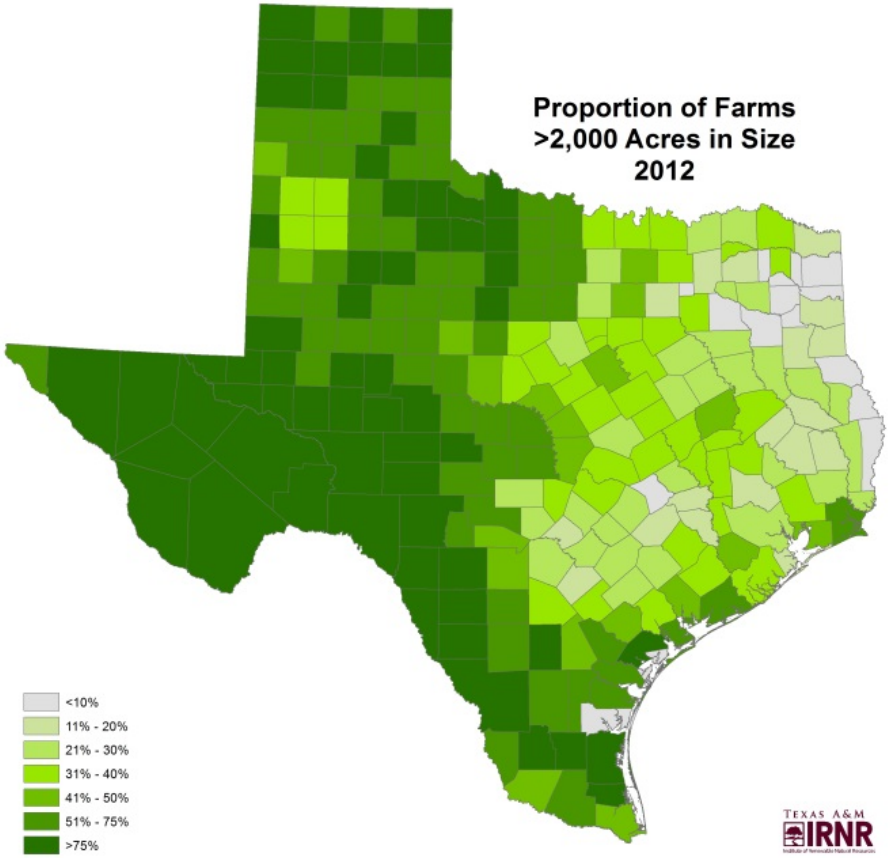


Ownership Size – *Number*

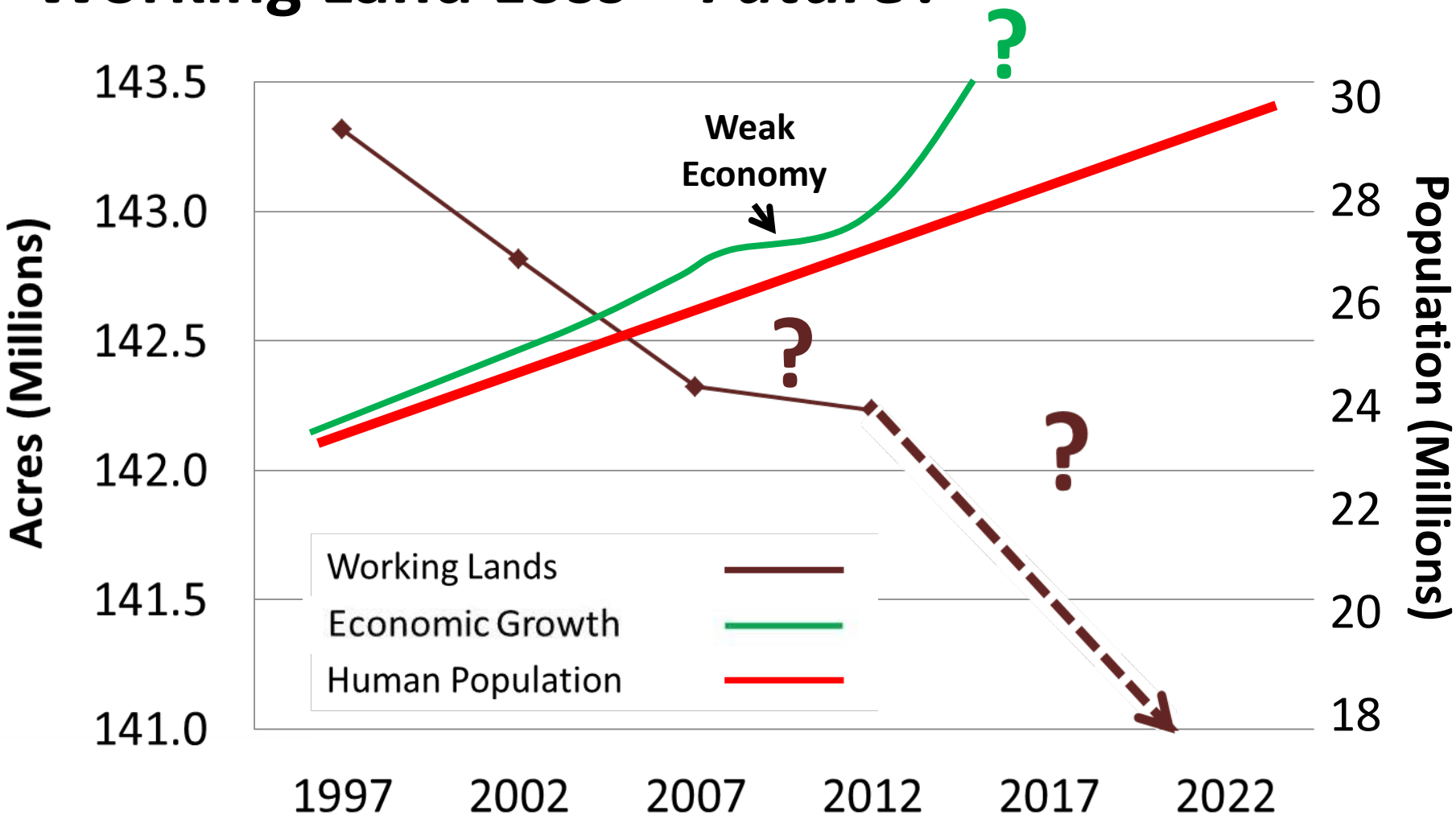


Ownership Size – *Distribution*





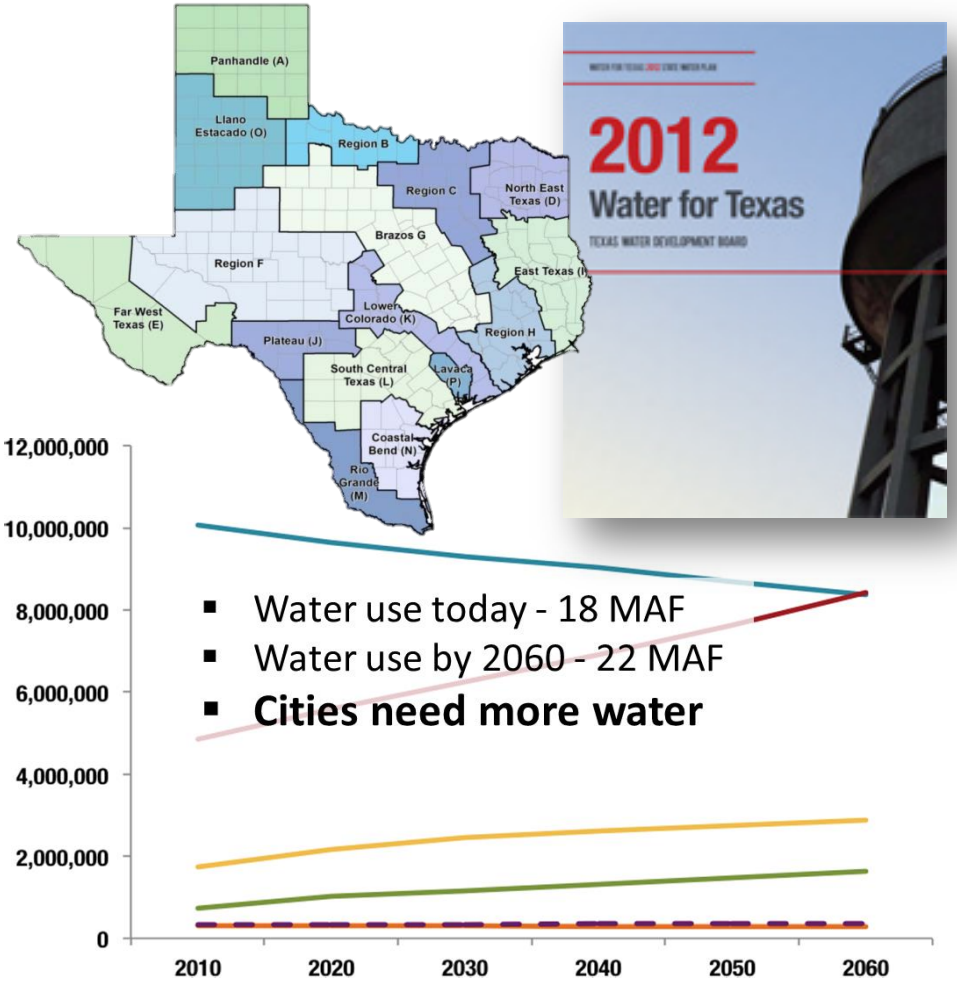
Working Land Loss – *Future*?




WATER-LAND CONNECTION

Water Demand and State Plan

- State water plan expected to generate 9 million acre-feet/year
- Implementation Costs = **$53 billion**
  - Up from $30.7 billion in 2007



Why “Land” Matters?

“Water conservation starts where the first rain drop falls”.

-President Lyndon B. Johnson

Versus

Water Conservation 101

"Water conservation starts where the first rain drop falls".

-President Lyndon B. Johnson

100%

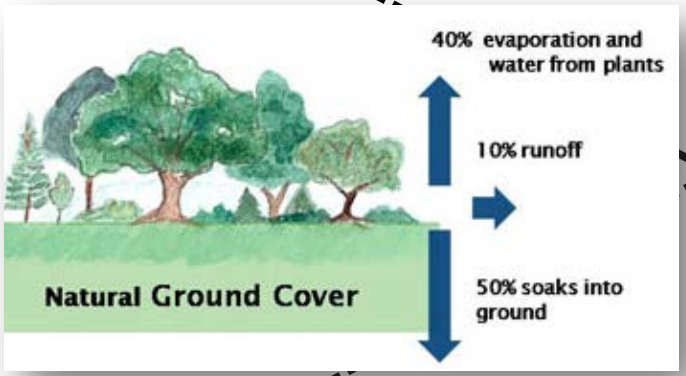
75%

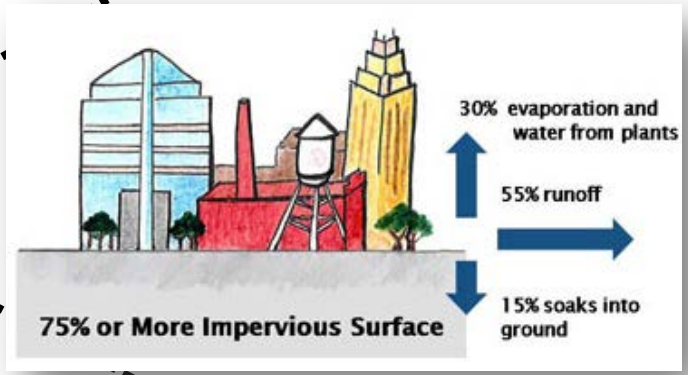
50%

25%

0%

Run-off





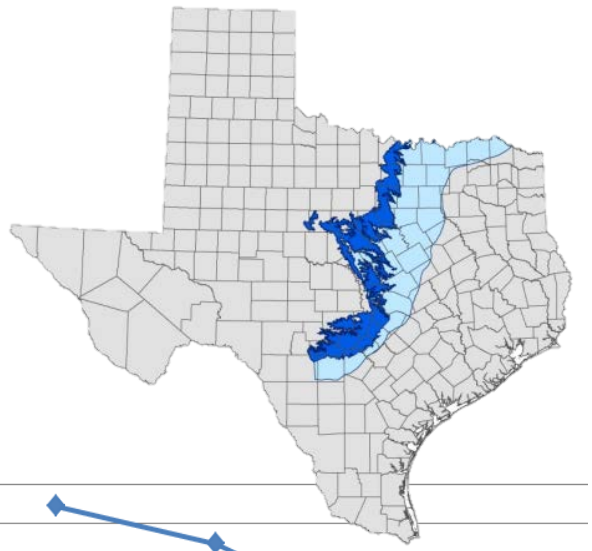
Infiltration

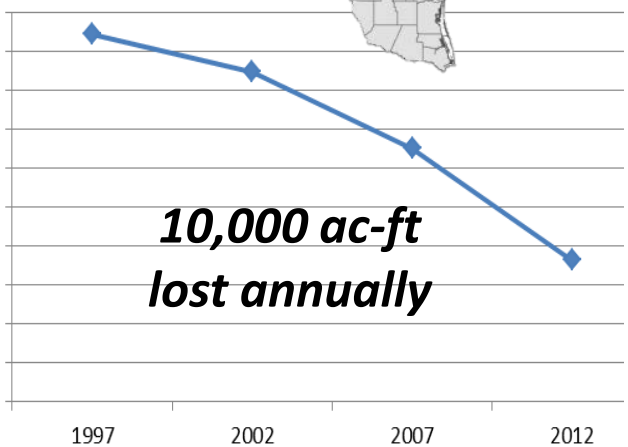
Land/Cover Type

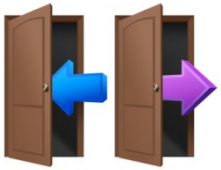
No Land, No Water?

- What loss does conversion from ranch to subdivision have on *potential* infiltration capacity?

  Assumptions:
  - Average Rainfall – 35 inches/yr
  - 2.92 ac-ft from Rainfall/acre
    - 75% infiltration (good cover) = 2.19 ac-ft
    - 15% infiltration (impervious) = 0.44 ac-ft
  - 1.75 ac-ft Difference in Land Type on a per acre basis
- **Carrizo-Wilcox Aquifer** – ≈5,700 acres of farm/ranch land lost annually
- **≈10,000 ac-ft in potential infiltration capacity lost annually**
- Land conservation lower cost?

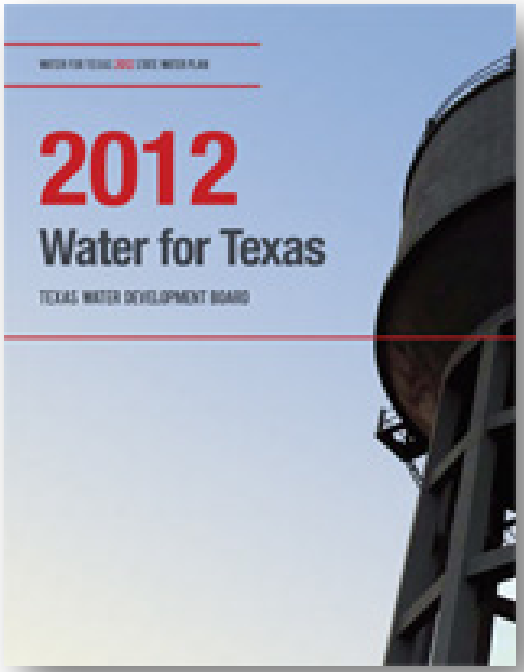






Land Conservation as Water Strategy?

- Should we consider the value of land conservation as a viable, cost-effective water strategy?
- Is "Land Infrastructure" as important as city infrastructure?
- Strategy in State Water Plan?



44K ac-ft annually

"Yesterday is not ours to recover, but tomorrow is ours to win or lose".

-President Lyndon B. Johnson

Way Forward

- Land conversion and fragmentation continues. Linked population size, land value, ownership size.
- How do we secure future energy, water, food, and ecosystem services from a dynamic but shrinking land base?
- Continued or new support of:
  - 1D and 1D1
  - Market-driven, incentive-based programs
  - Communicating the *public* benefit of private lands

The Good, The Bad, and The Ugly

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AGRICULTURE & LIFE SCIENCES

TEXAS A&M AGRILIFE RESEARCH | EXTENSION

Promoting Private Lands Stewardship through Research, Education, and Policy.

http://irnr.tamu.edu/
http://txlandtrends.org/

TEXAS A&M IRNR
Institute of Renewable Natural Resources

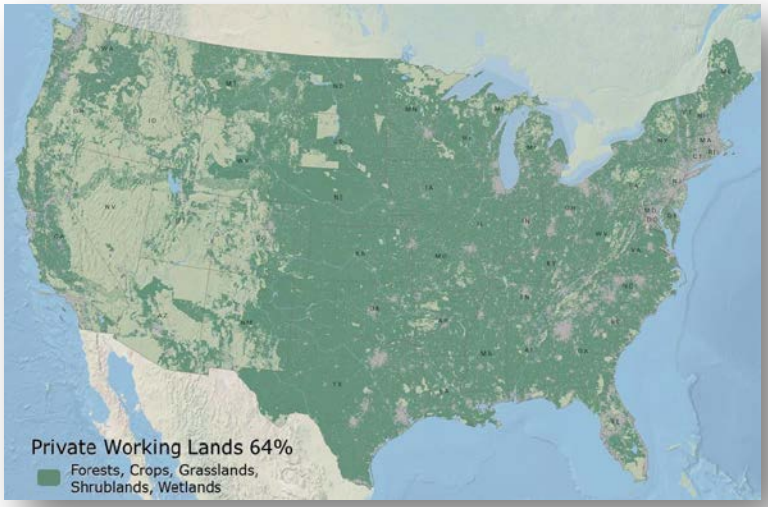
Roel R. Lopez
roel@tamu.edu

TEXAS A&M IRNR


CHANGING…PERSPECTIVES

Presentation Outline

- Private lands in the U.S. undergoing significant changes (e.g., >1 acre of farmland lost/minute).
- Most lands in U.S. are privately-owned (64%) and play an unseen yet critical role in water/food sustainability and national/energy security.
- *Effective* conservation will require engagement with private landowners
- Challenges with *Changing* Perspectives and Landowner demographics



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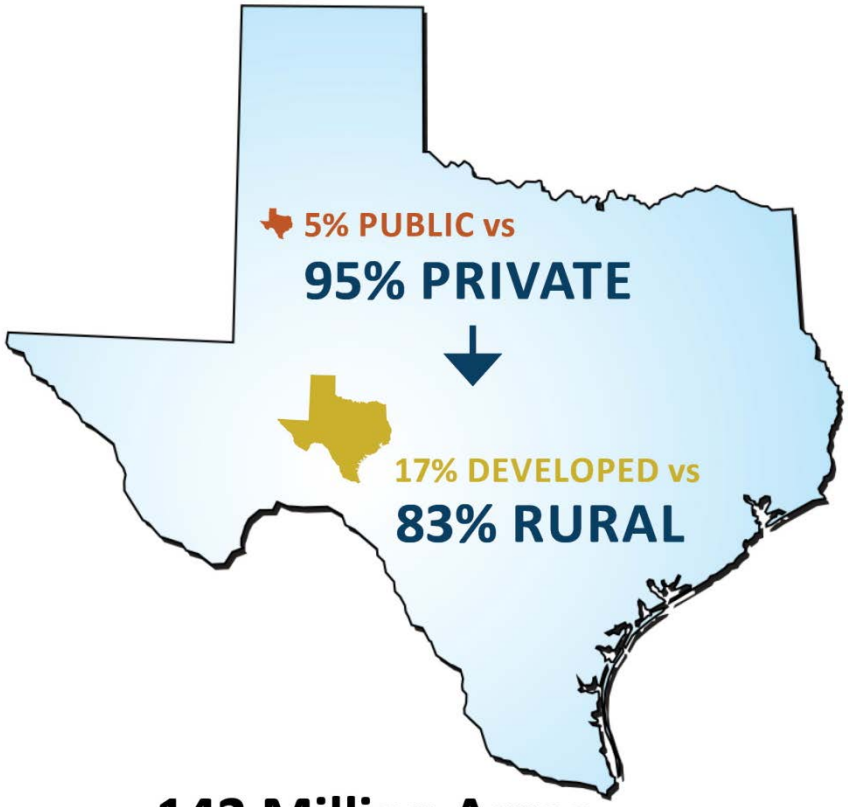

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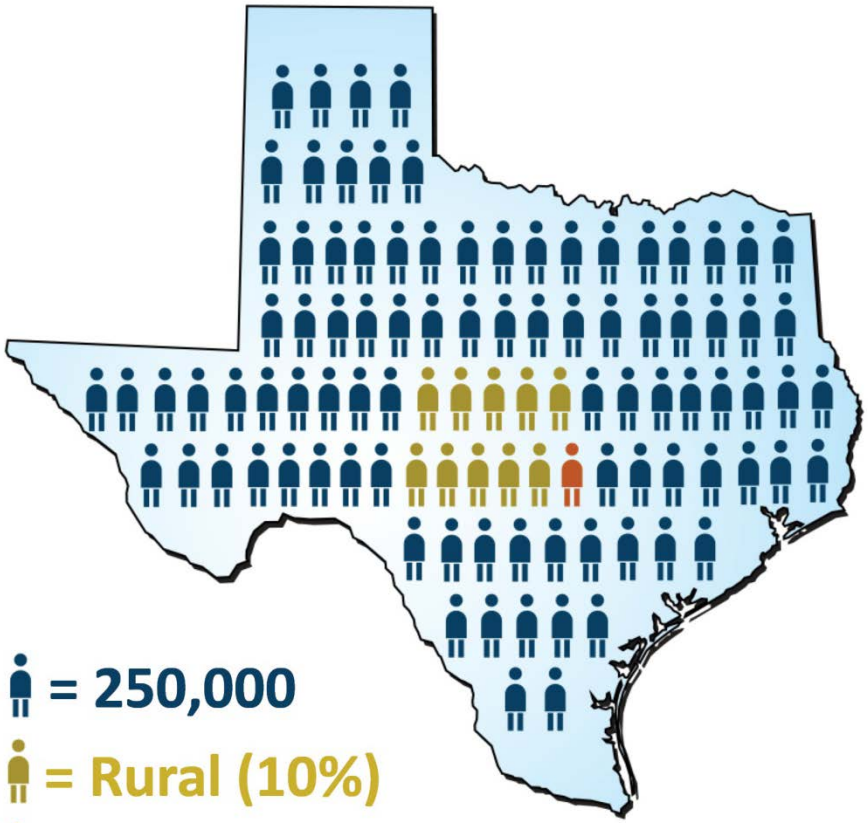

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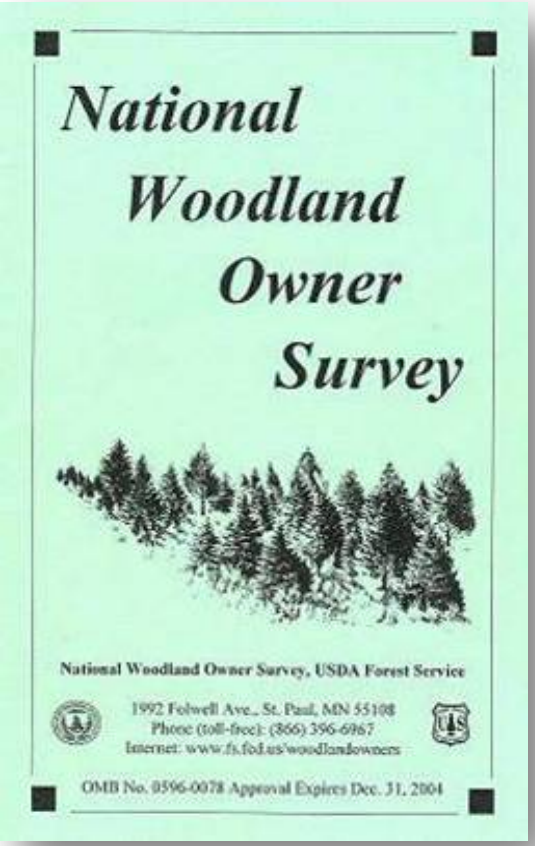

National
Woodland
Owner
Survey
National Woodland Owner Survey, USDA Forest Service
1992 Folwell Ave., St. Paul, MN 55108
Phone (toll-free): (866) 396-6967
Internet: www.fs.fed.us/woodlandowners
OMB No. 0596-0078 Approval Expires Dec. 31, 2004


Texas
Land
Trends

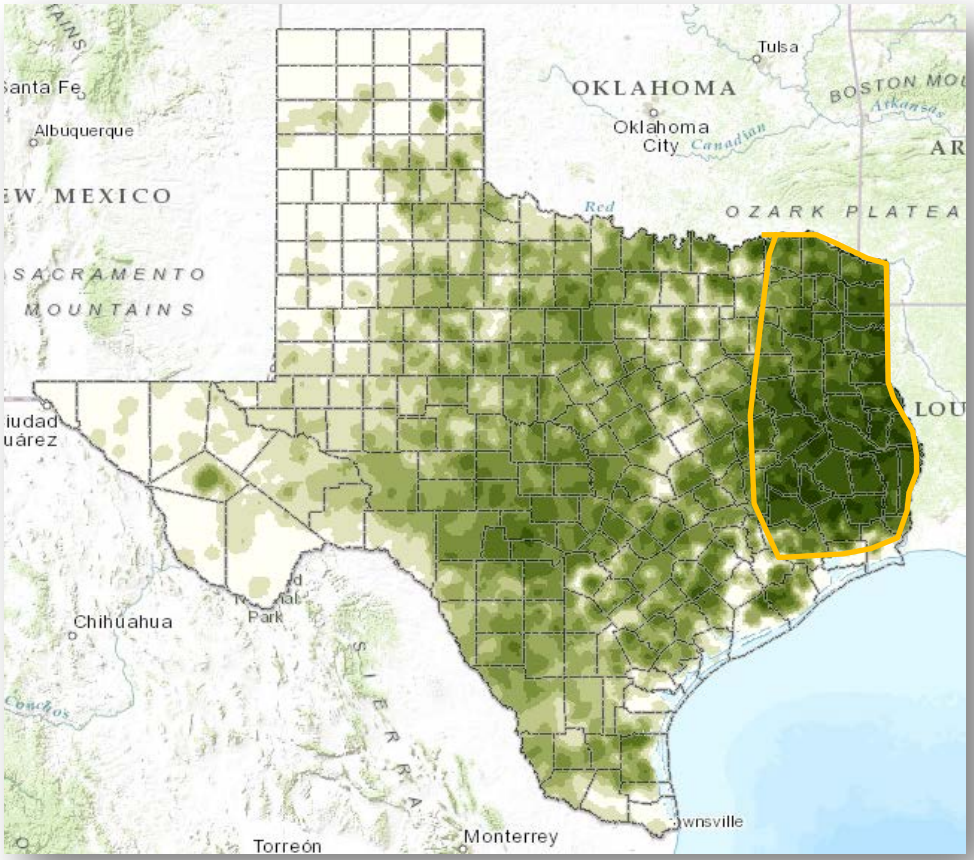
Family Forests by the Numbers

East Texas

- Acres: 6,107,000
- Ownerships: 75,000
- Average size: 81.4 ac
- Owners: 160,000

West Texas

- Acres: 35,983,000
- Ownerships: 292,000
- Average size: 123.4 ac
- Owners: 498,000



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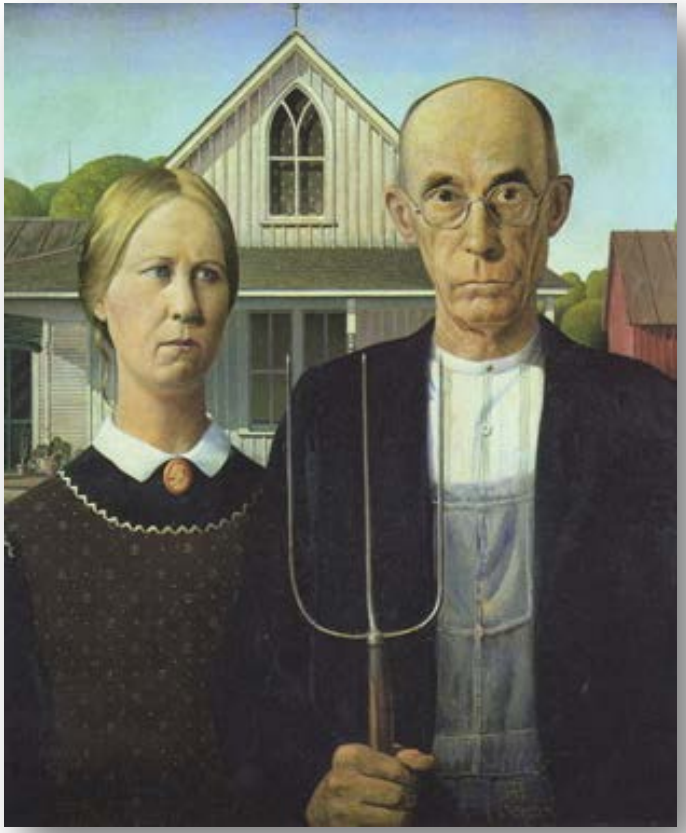

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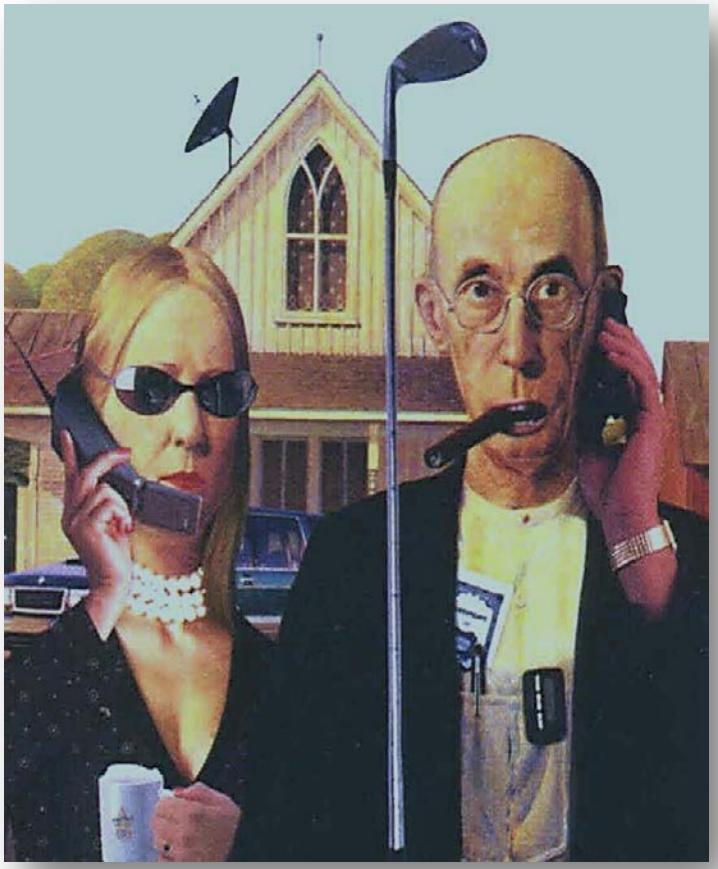
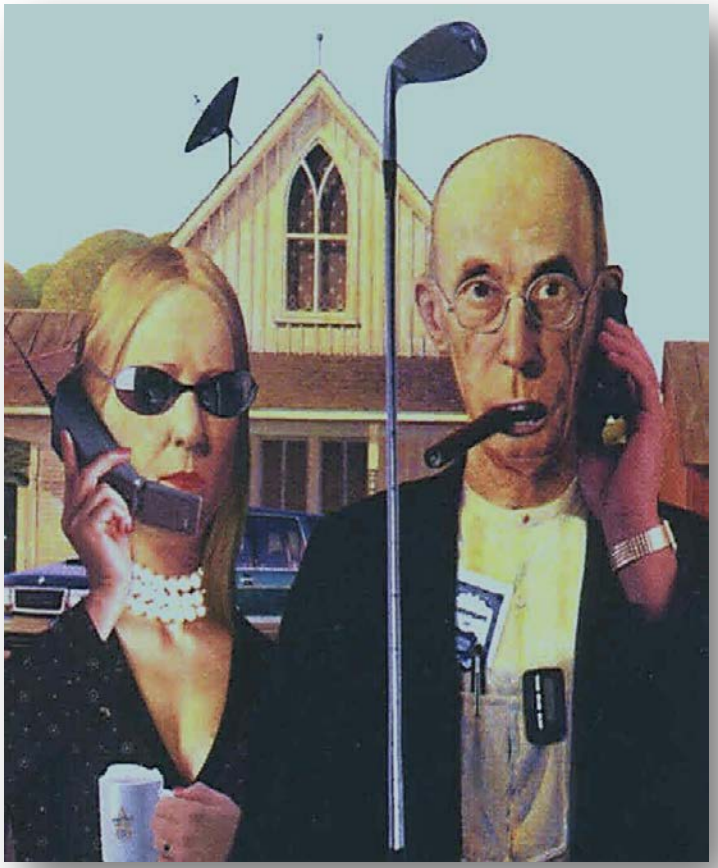
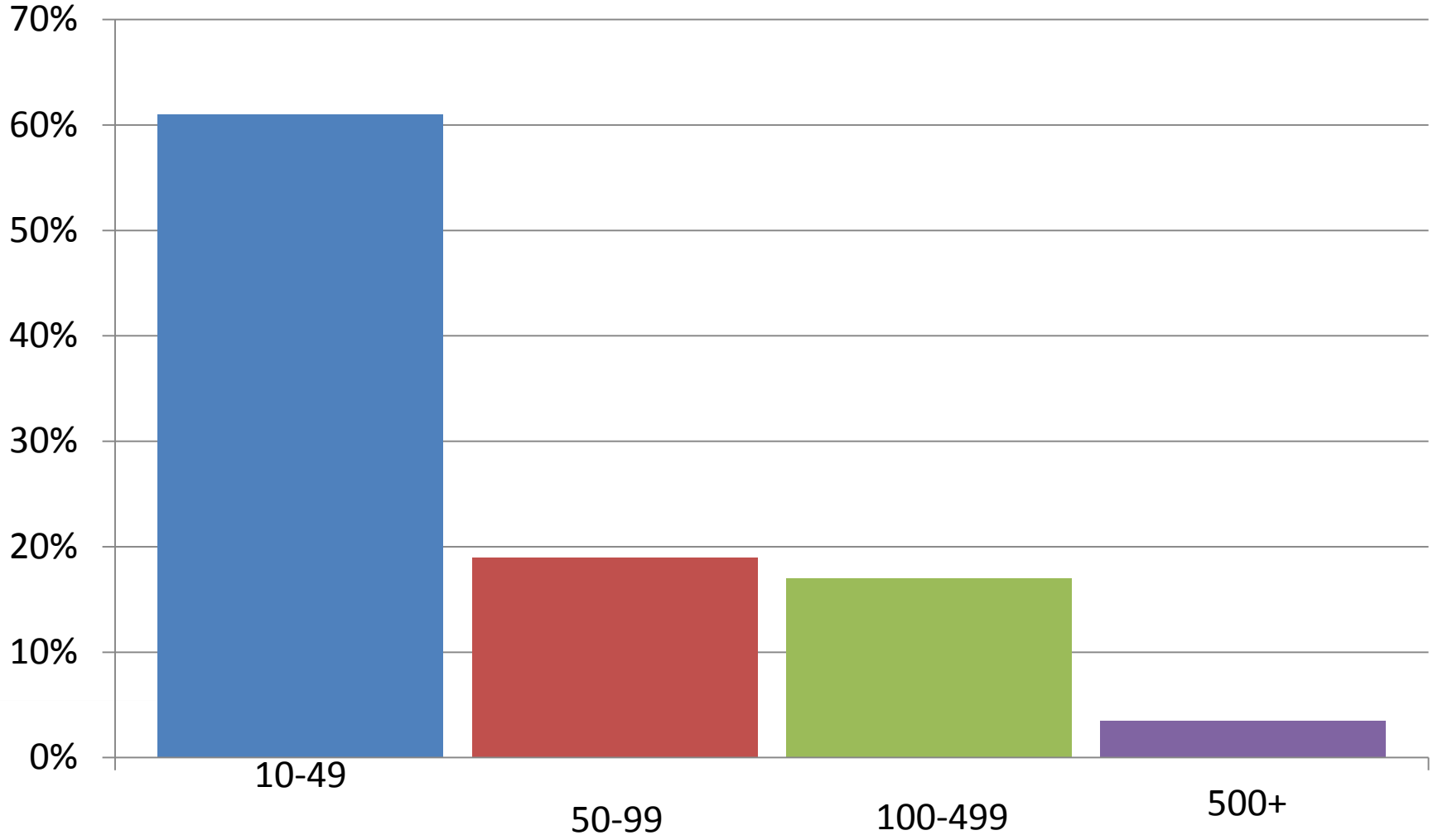


Landowner Demographics

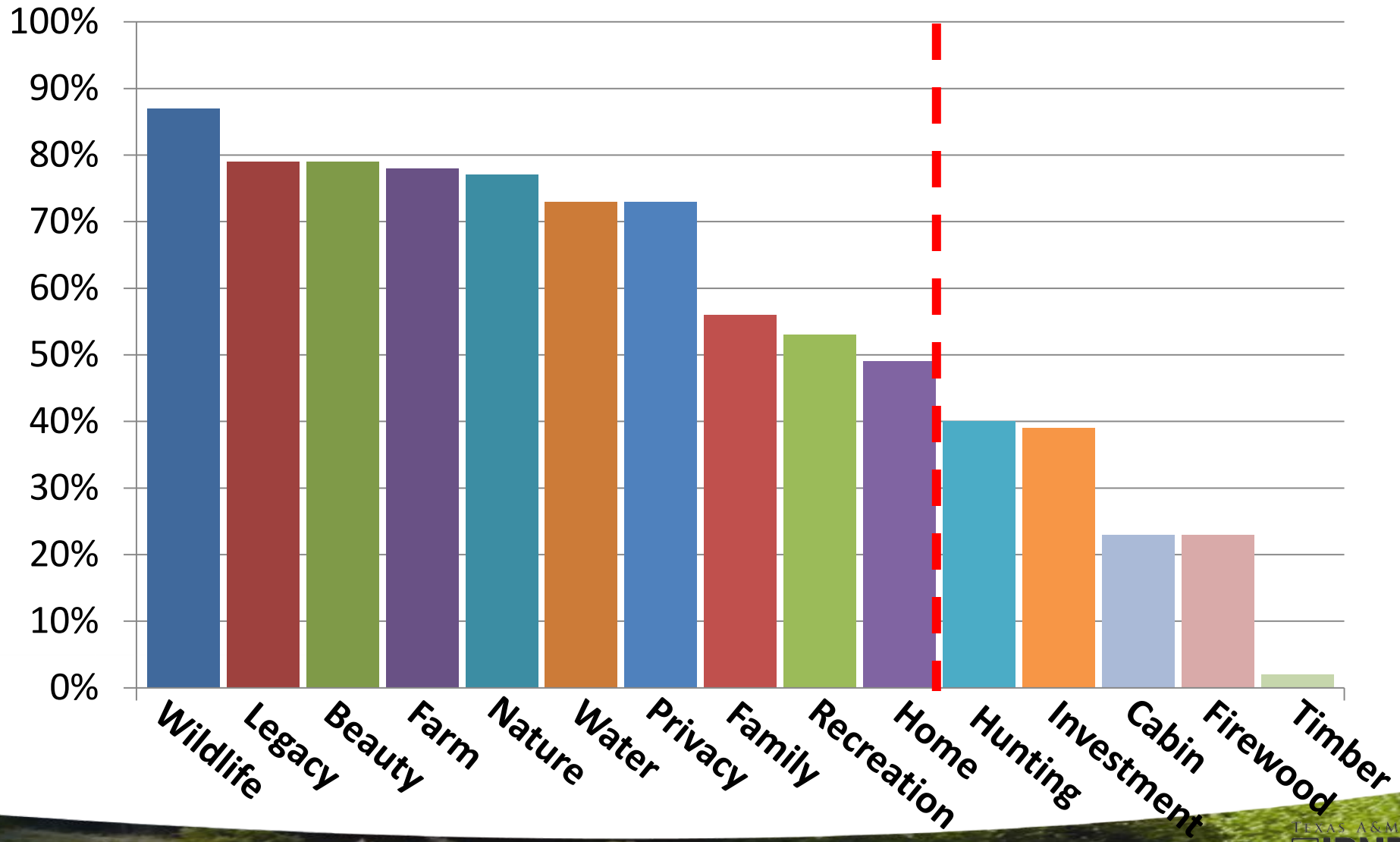
- Absentee ownerships
  - 45% of ownerships
- Part of farm
  - 42% of ownerships
- New ownerships (<10 yrs)
  - 25% of ownerships



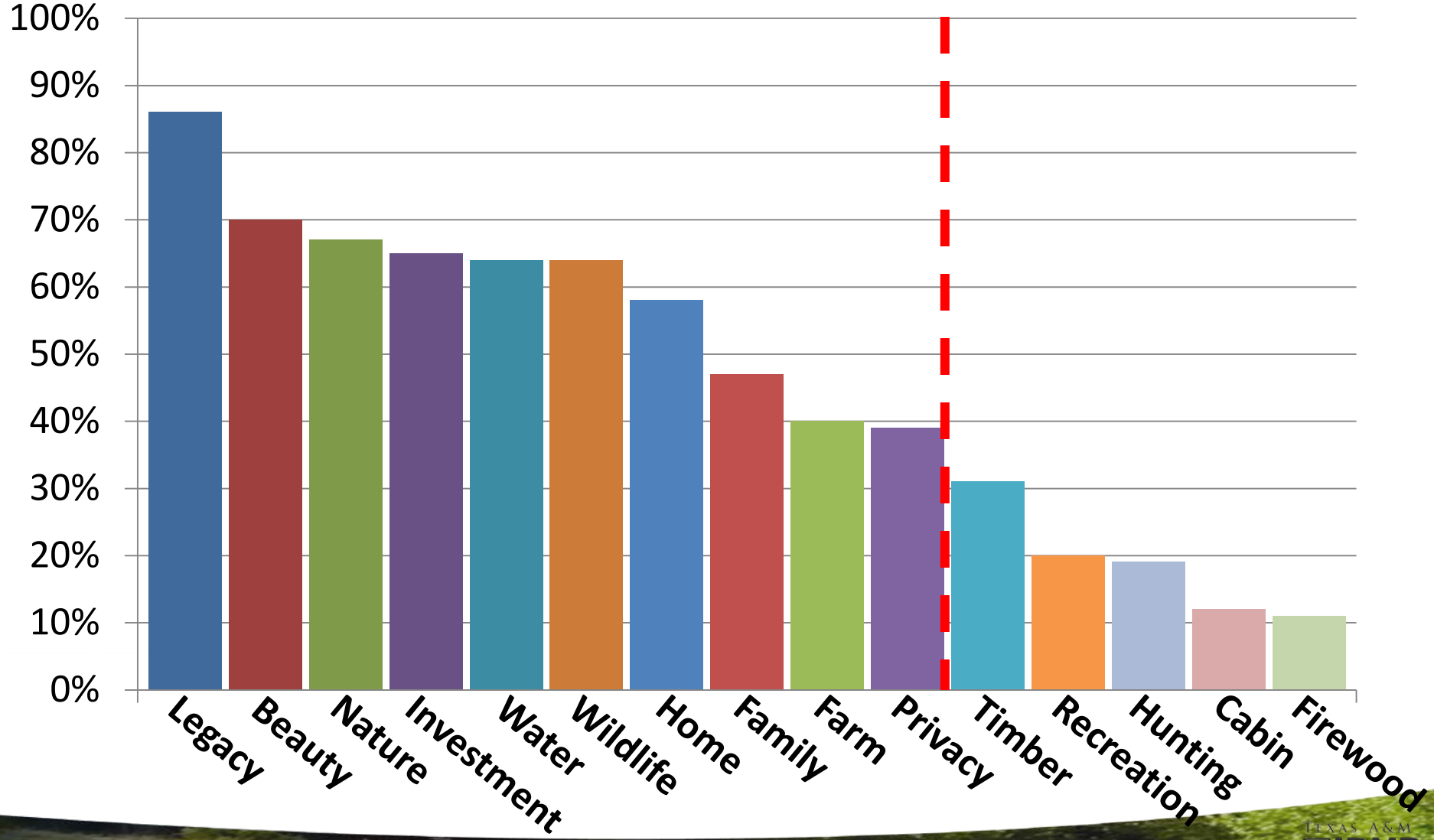
Size of Family Land Holdings in Texas



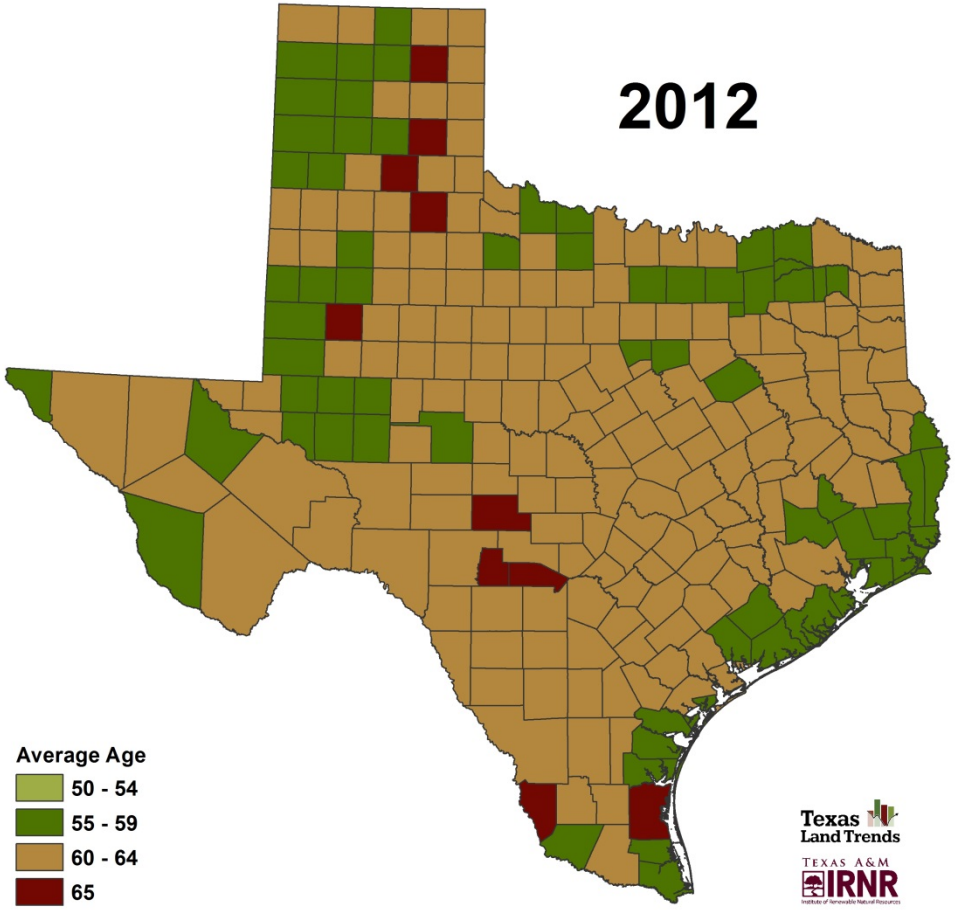
Reasons for Owning Land – West Texas



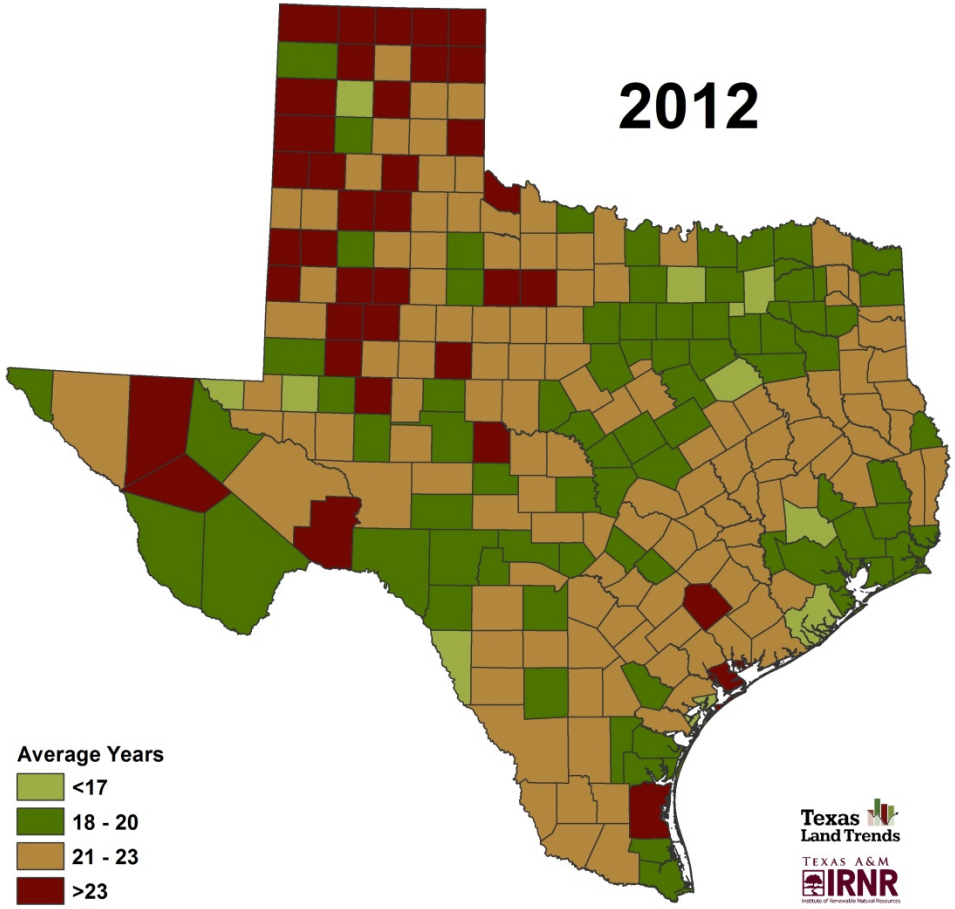
Reasons for Owning Land – East Texas



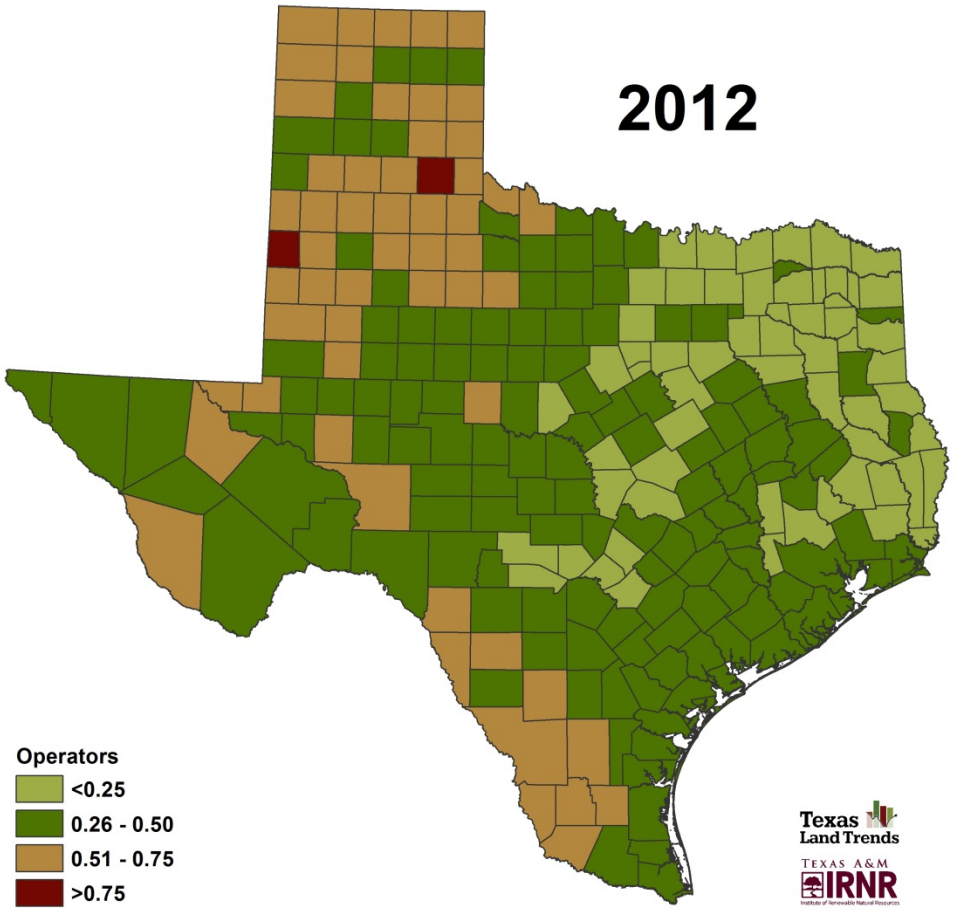
Landowner Average Age



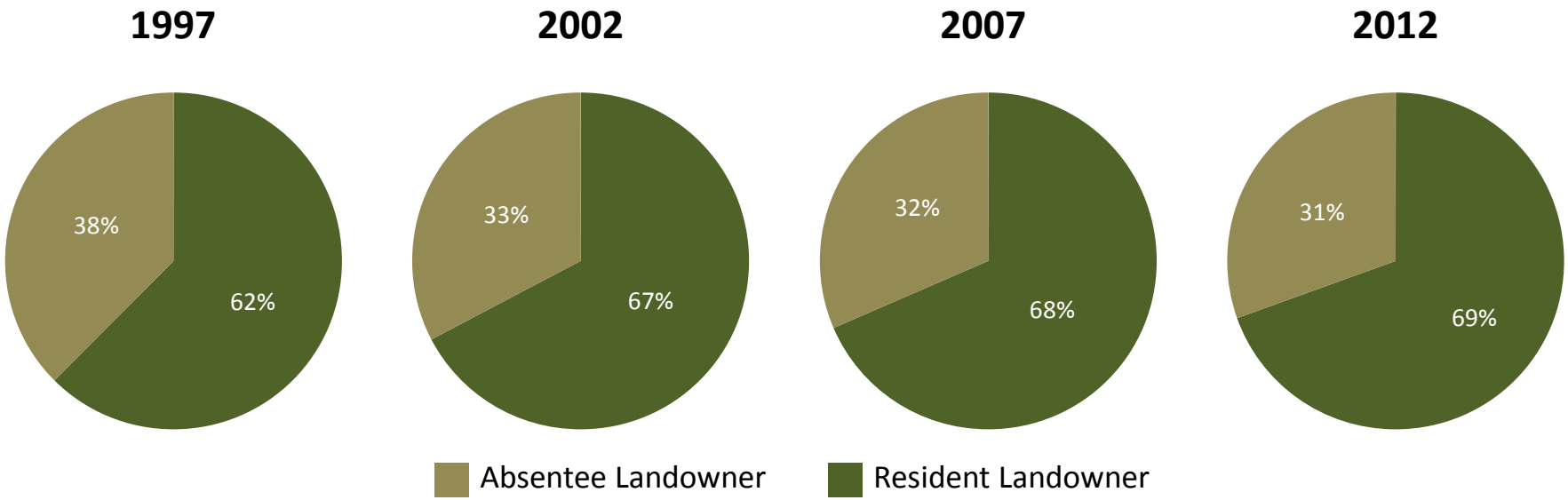
Operator Years on Current Operation

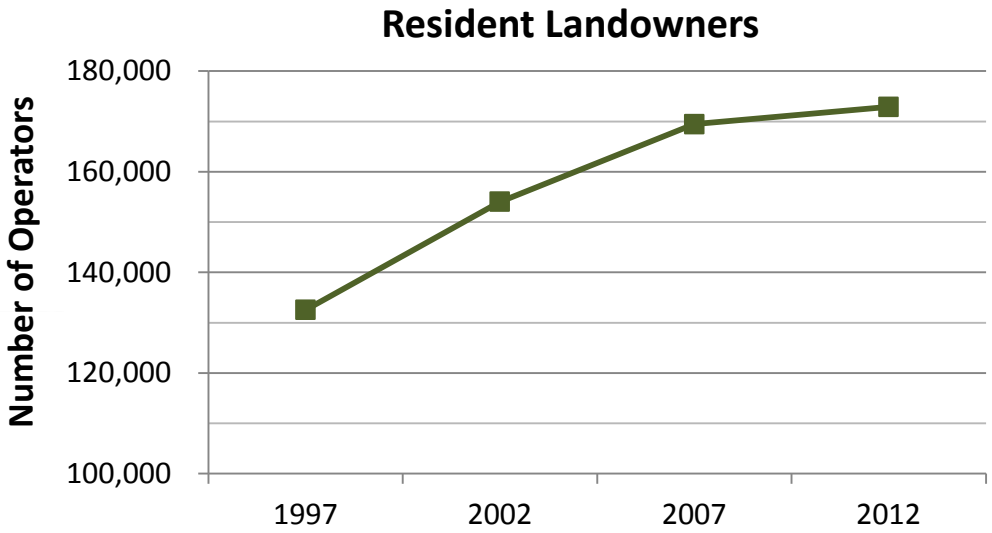


Absentee Operators (Ratio)

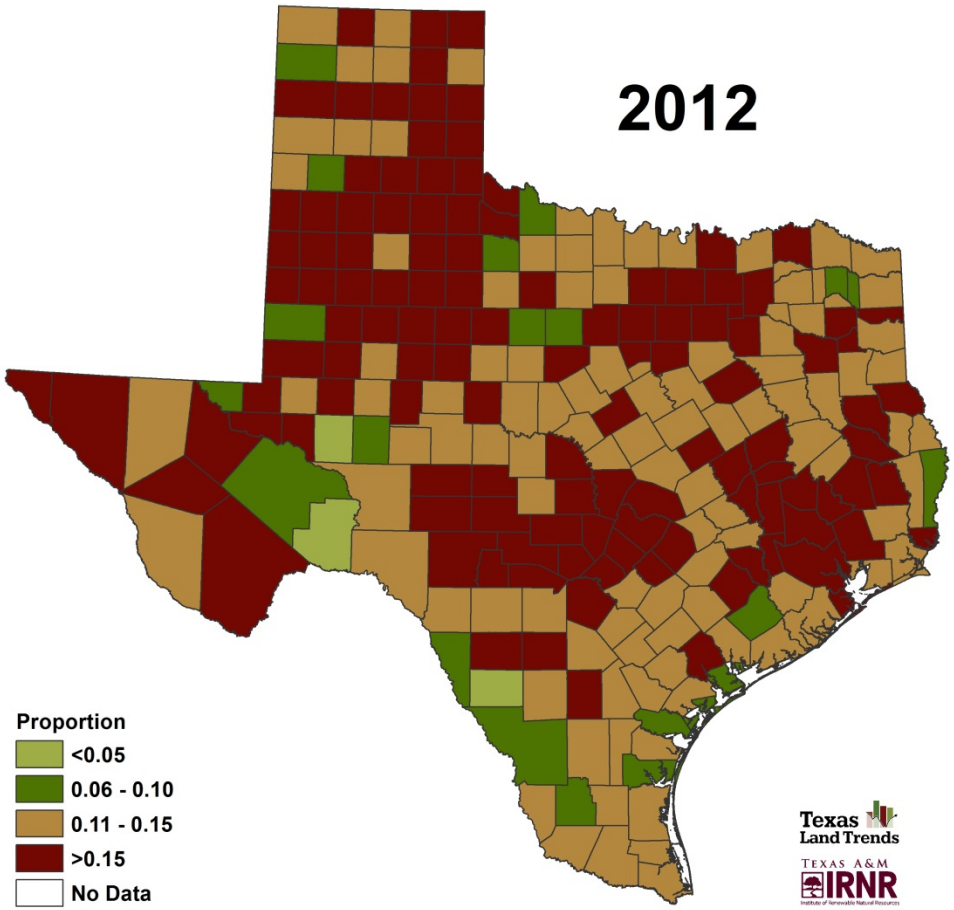


Absentee vs. Resident Landowners

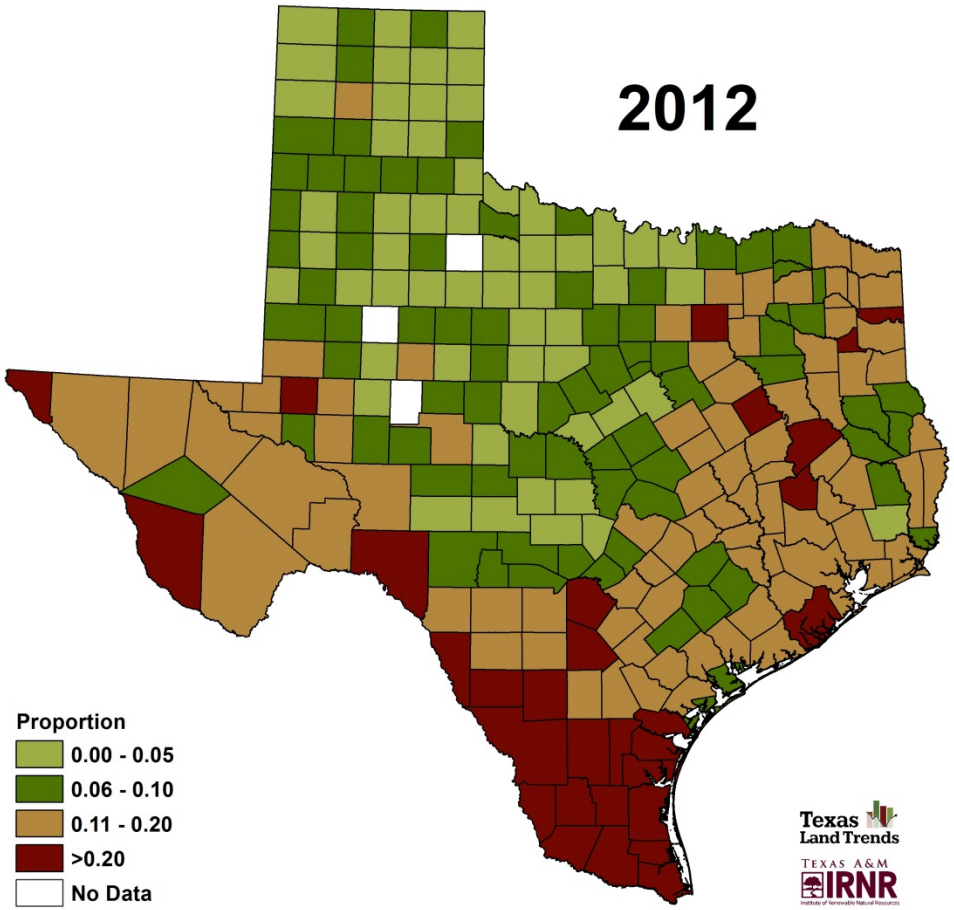




Female Operators (Ratio)



Minority Operators (Ratio)



Landowner Ethnicity (Number of Operators)

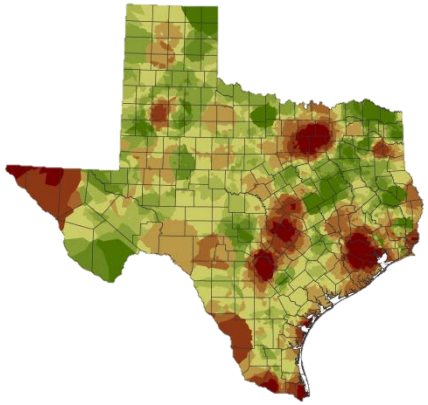
	2007	2012	Percent Change
African American	6,124	8,551	39.6%
Hispanic	20,351	23,689	16.4%
White	236,568	235,449	-0.5%
Other	4,686	4,782	2.0%

Landowner Ethnicity (Number of Acres)

	2007	2012	Percent Change
African American	561,693	900,870	60.4%
Hispanic	5,142,720	6,612,971	28.6%
White	104,554,595	112,741,530	7.8%
Other	733,251	694,266	-5.3%

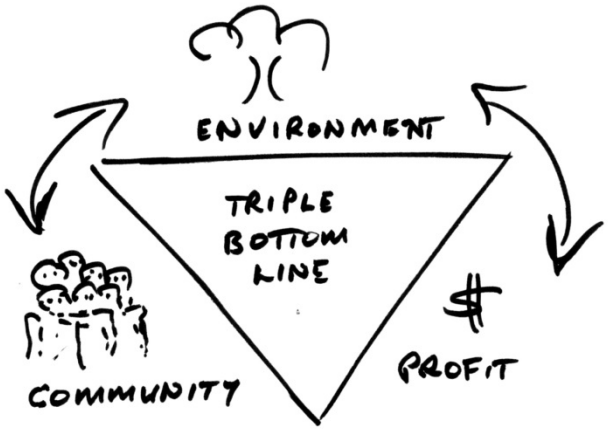
The Challenge…

- Average ownership size decreasing.
- Different management objectives, may not be driven by traditional factors.
- Aging population, largest intergenerational transfer.



The Challenge…

- **Rapid Change in Rural Landscapes.** *How do we maintain rural lands with increasing human population?*
- **Different Actors – Landowners and Urban Texas.** *How do we engage broader audience?*
- **Game Changers – Water, T&E, and Energy.** *How do we balance demands? How do we take these challenges and create opportunities?*



The Grand Challenges…

- **Changing Places** – Loss of working lands, fragmentation and conversion.
- **Changing Perspectives** – Aging landowners, different objectives, largest intergenerational transfer.
- **Changing People** – Increasing human population, shifts in ethnicity and urban residents.

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