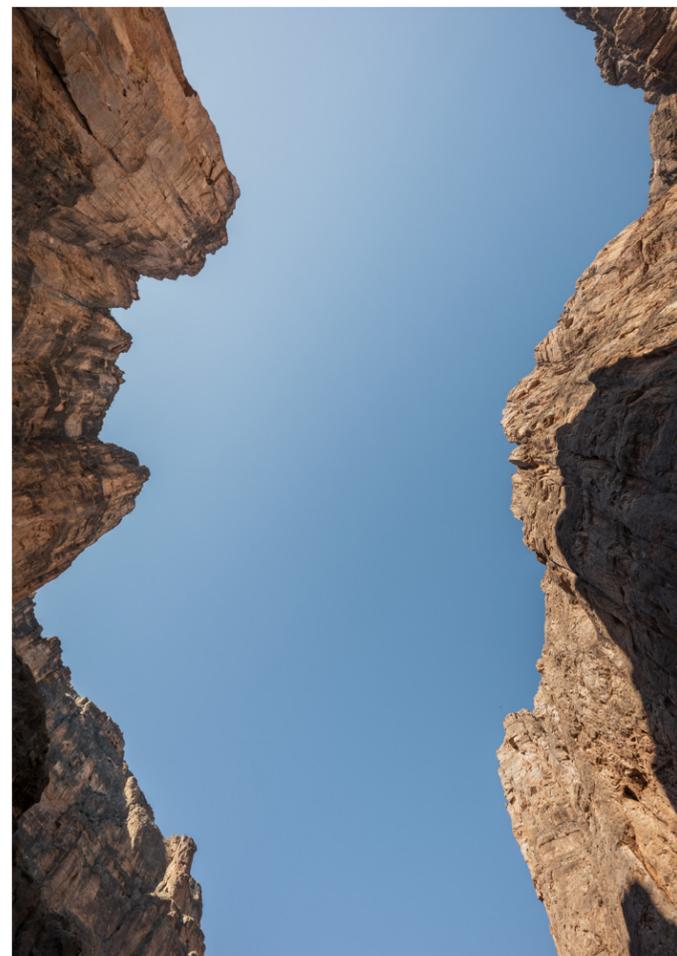


Texas Land Trends

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**Trends in Land Ownership
Along Texas Borderlands**



Overview

The U.S.-Mexico Borderlands are a unique region. In Texas, this area represents vast expanses of rural working lands and urban centers along the 1,254-mile long stretch.

From the deep canyons of Big Bend formed by the Rio Grande River, to the wide delta of the Rio Grande Valley ending at the Gulf of Mexico, the Texas-Mexico Borderlands are comprised of unique flora and fauna, including endangered and endemic species, as well as migrating wildlife that travel historic corridors. At both ends of the Rio Grande lie two heavily populated Borderplexes, El Paso-Juárez and Brownsville-Matamoros, and nestled in between are rural working lands, growing urban centers, and public park and refuge lands (Figure 1).

In the late 1700's, *Spanish Land Grants* were distributed along the Rio Grande, with fewer grants made along the northern stretch of the river.¹ The land surveyed for town settlers in the southern region consisted of long, narrow tracts known as *porciones* to allow water access for grantees. Away from these town grants, ranchers obtained larger Spanish and Mexican land grants that extended to the Nueces River. These lands became the basis for a dynamic ranching economy and fueled road and railroad development and subsequent human settlements (Table 1). Much has changed in the last few centuries, including the large population increases that have led to the approximate 2.6 million inhabitants who call this part of Texas home today.

The purpose of this report is to describe changes in population density and the resulting land ownership patterns and land use changes over time within the Texas Borderland counties. This assessment also serves to identify regions where rapid changes have occurred and where similar changes can be expected in the future.

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Photos

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Designer

Alison Lund

Editor

Brittany Wegner

Contributors

Angelica Lopez

Alison Lund

Matthew Crawford

Addie Smith

Kevin Skow

Joshua Cross

Louis Harveson

Roel Lopez

External Reviewers

Armando Alonzo

Jim Bradbury

Neal Wilkins

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About the Data

We examined several datasets to explore changes and identify trends along Texas Borderland counties. County population totals were obtained through the Texas State Historical Association for the 1900 estimate and the Texas Demographic Center for the 2018 estimate.^{2,3} The Original Texas Land Survey (OTLS) data are a geographic collection of Spanish and Mexican Land Grants from the 1700-1800s. For the purpose of this report, the OTLS data are considered the initial parcel layer, or baseline, in our land parcel comparison.⁴ We acquired current (2017 and 2018) parcel data from County Appraisal Districts for all but two counties, Hudspeth and Starr, which were not available electronically. We define urban counties as those with

a population center >50,000.⁵ Texas Land Trends datasets were used to assess changes in rural working lands from 1997 to 2012, and to develop a Land Risk Index that predicts areas likely to experience future land fragmentation. Texas Land Trends datasets incorporate data from the Texas State Comptroller of Public Accounts and the U.S. Department of Agriculture National Agricultural Statistics Service's Census of Agriculture.⁶

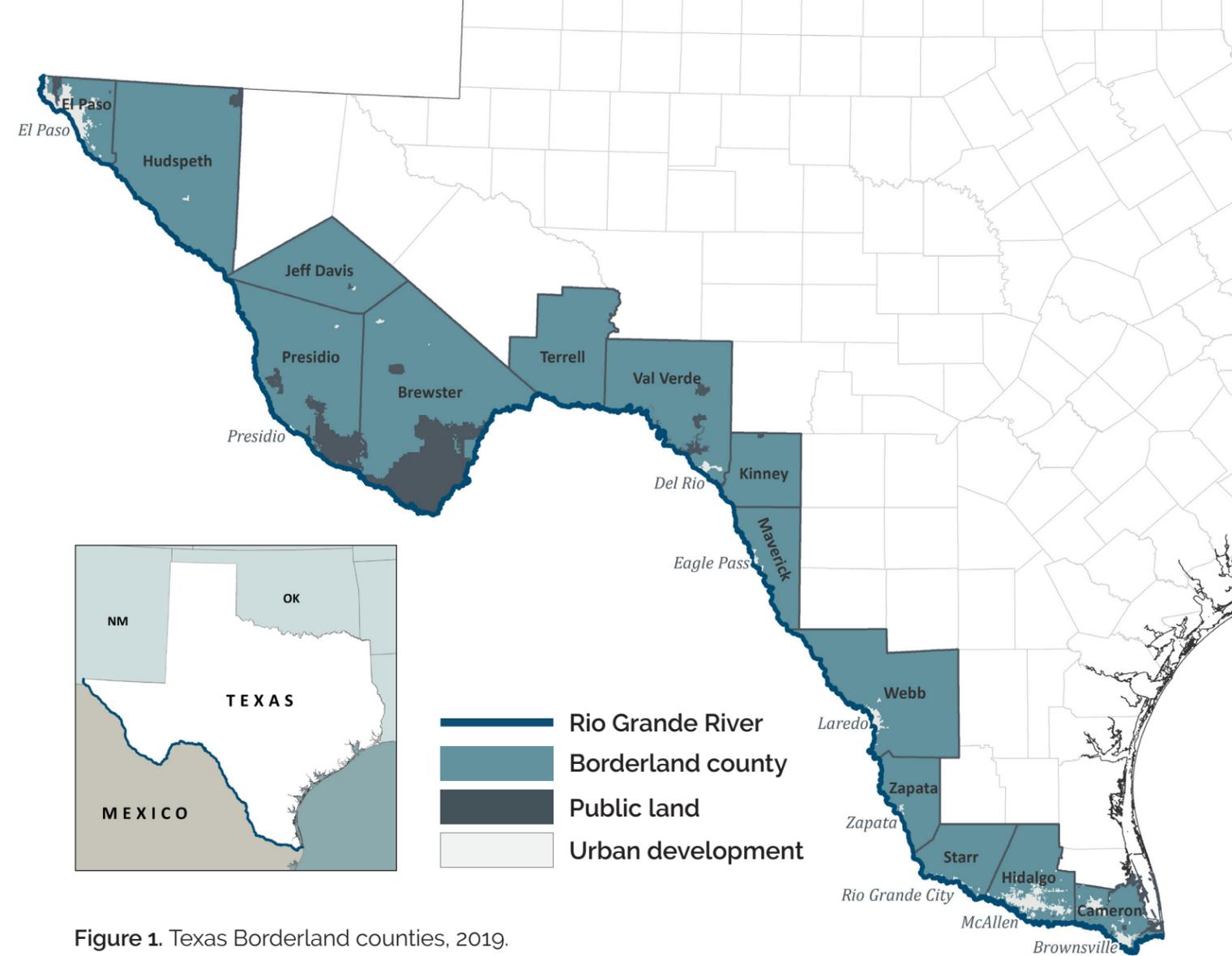


Figure 1. Texas Borderland counties, 2019.

Working Lands

Comprised of privately-owned farms, ranches, and forests, rural working lands provide economic benefits to rural communities, vital ecosystem services for urban centers (e.g., water filtration), and habitat for wildlife species.



Population Increase

Many Texas Borderland counties have seen steady increases in human populations due to natural growth and immigration.⁷ With the early founding of Spanish town settlements along the Rio Grande and the subsequent creation of the international border in 1848, urban development occurred along the river and pushed inland. As urbanization expanded, it overtook rural lands resulting in their fragmentation and conversion to non-agricultural uses. Historically, El Paso and Webb Counties held the largest population centers with the old colonial town settlements of El Paso and Laredo, respectively (Table 1). Today, Hidalgo County, which has seen the largest population increase in the McAllen-Edinburg-Mission metropolitan area, closely trails El Paso as the most populated Texas Borderland county, followed by Cameron and Webb. Conversely, Terrell County had one of the lower population estimates in 1900, and was also the only county to experience a population loss over the examined time period.

Table 1. Population changes in Texas Borderland counties, 1900 and 2018.

County	1900 Population*	2018 Population	Fold change (X times)
Trans-Pecos			
El Paso	24,886	847,136	34.0
Hudspeth	962	3,711	3.9
Jeff Davis	1,150	2,251	2.0
Presidio	3,673	6,846	1.9
Brewster	2,356	9,590	4.1
Terrell	1,430	787	—
Middle Valley			
Val Verde	5,263	51,654	9.8
Kinney	2,447	3,734	1.5
Maverick	4,066	57,915	14.2
Webb	21,851	280,288	12.8
Zapata	4,760	14,189	3.0
Lower Valley			
Starr	11,469	64,053	5.6
Hidalgo	6,837	860,288	125.8
Cameron	16,095	426,191	26.5
Total	107,245	2,628,633	24.5

* Data for Terrell County are from 1910, and Hudspeth County data are from 1920.

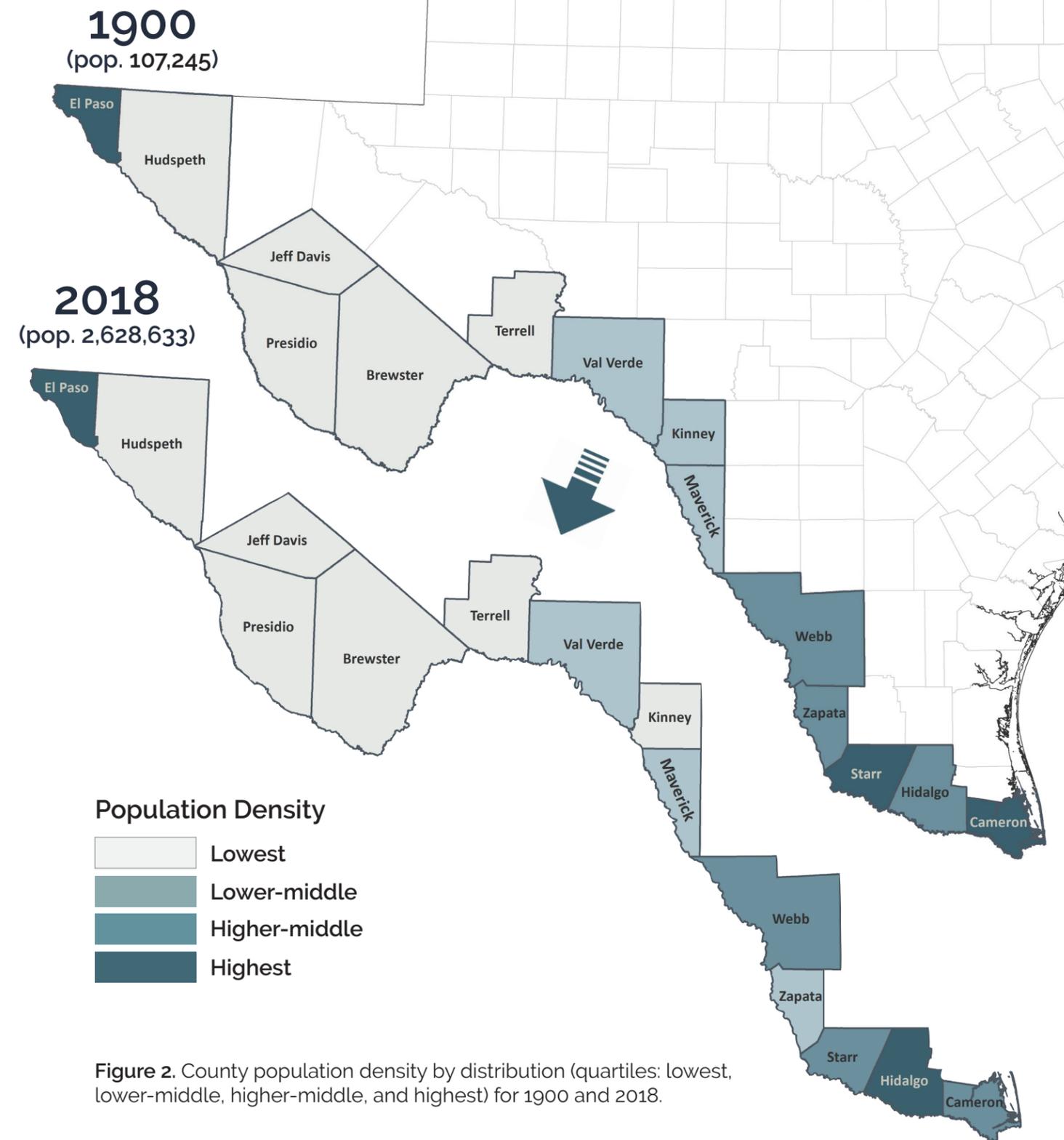


Figure 2. County population density by distribution (quartiles: lowest, lower-middle, higher-middle, and highest) for 1900 and 2018.

We found significant population increases in the majority of Texas Borderland counties, especially surrounding urban centers. Rapid population growth greatly influences the pressure to subdivide and convert rural working lands, thus impacting their long-term stewardship and sustainability.

Land Parcel Fragmentation

The Rio Grande not only serves as an international boundary, but has historically provided water for agricultural operations, promoting early settlements along its banks. In some cases, urban centers along the river expanded in population density, resulting in the fragmentation of land parcels and subsequent increases in the total number of parcel ownerships (Figure 3). In comparing the number of private landowners and land parcels, it is apparent some landowners own multiple parcels (Tables 2 and 3). Throughout this region, land parcels are predominantly under private ownership (approximately 96%); however, public lands also exist, mainly in the northwestern portion of the region (Figure 1).

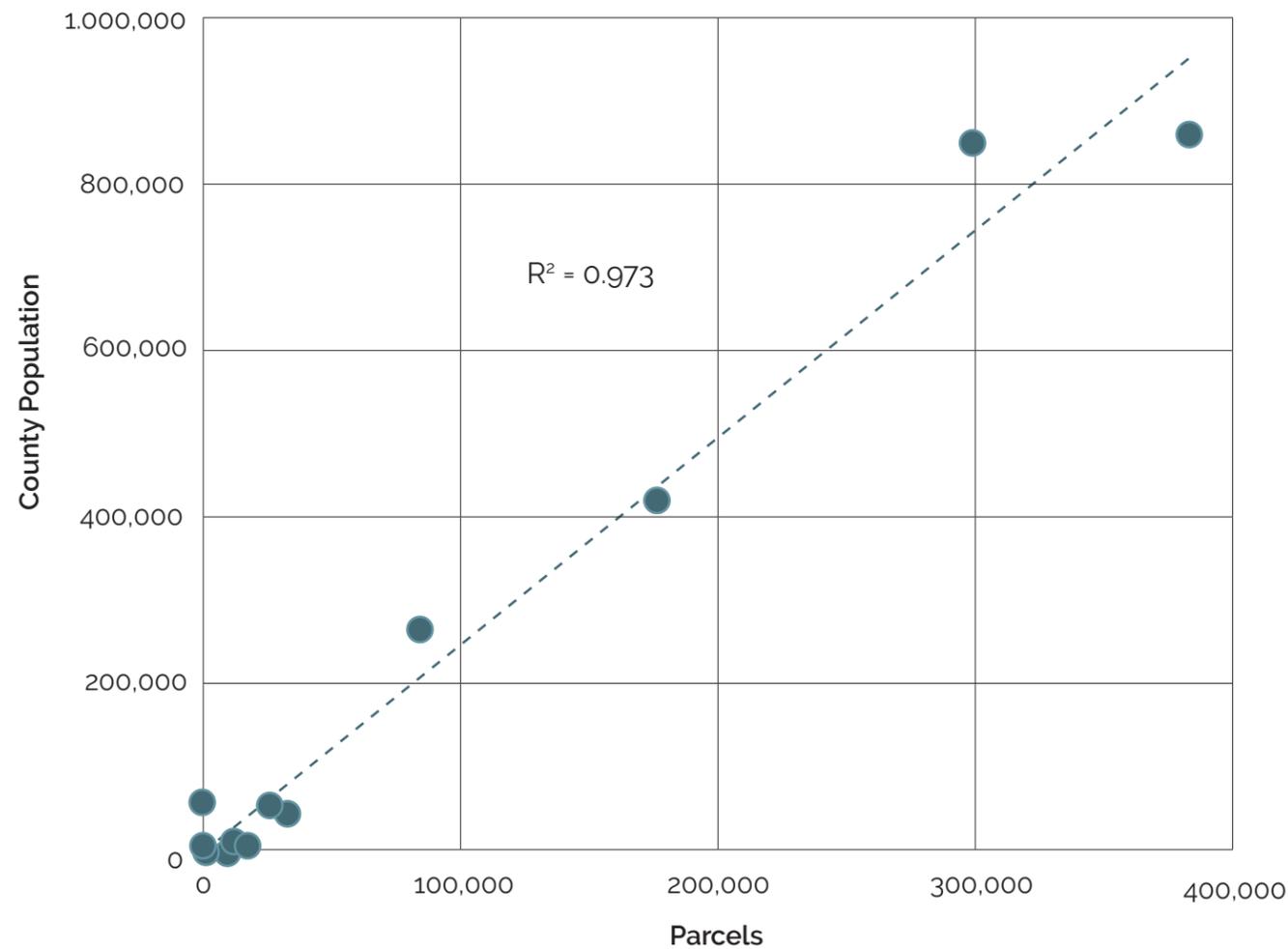


Figure 3. Relationship of land parcel numbers and county population density for Texas Borderland counties, 2018.

Our analysis found a relationship between county population density and land parcel numbers. As expected, when population density increases, so does the number of land parcels, an indicator of *land fragmentation* (Figure 3).

Table 2. Number of private landowners within Texas Borderland counties, 2018.

Total landowners	Landowners along river	Landowners within ½ mile of River	Landowners within 1 mile of river
712,047	2,761	22,500	60,190

Table 3. Number of privately-owned land parcels within Texas Borderland counties, 1900 and 2018.

County	Total parcels		Parcels along river		Parcels within ½ mile of river		Parcels within 1 mile of river	
	1900	2018	1900	2018	1900	2018	1900	2018
Trans-Pecos								
El Paso	1,091	379,062	37	1,097	43	10,269	47	21,625
Hudspeth*	4,815	—	196	—	227	—	260	—
Jeff Davis	2,736	2,922	1	1	2	2	7	3
Presidio	4,072	9,705	266	438	288	674	332	1,503
Brewster	5,246	16,055	69	11	73	40	89	80
Terrell	2,613	2,477	82	46	98	60	116	79
Middle Valley								
Val Verde	3,308	32,351	113	510	129	860	152	1,442
Kinney	1,438	10,307	40	40	43	42	51	51
Maverick	1,163	25,023	110	360	115	2,487	133	7,886
Webb	2,883	82,660	135	878	137	9,595	148	23,444
Zapata	280	12,133	38	199	40	865	41	2,170
Lower Valley								
Starr*	587	—	56	—	57	—	57	—
Hidalgo	207	295,418	48	452	49	1,536	50	3,678
Cameron	94	174,136	6	920	6	4,799	7	18,410
Total	30,533	1,042,249	1,197	4,952	1,307	31,229	1,490	80,371

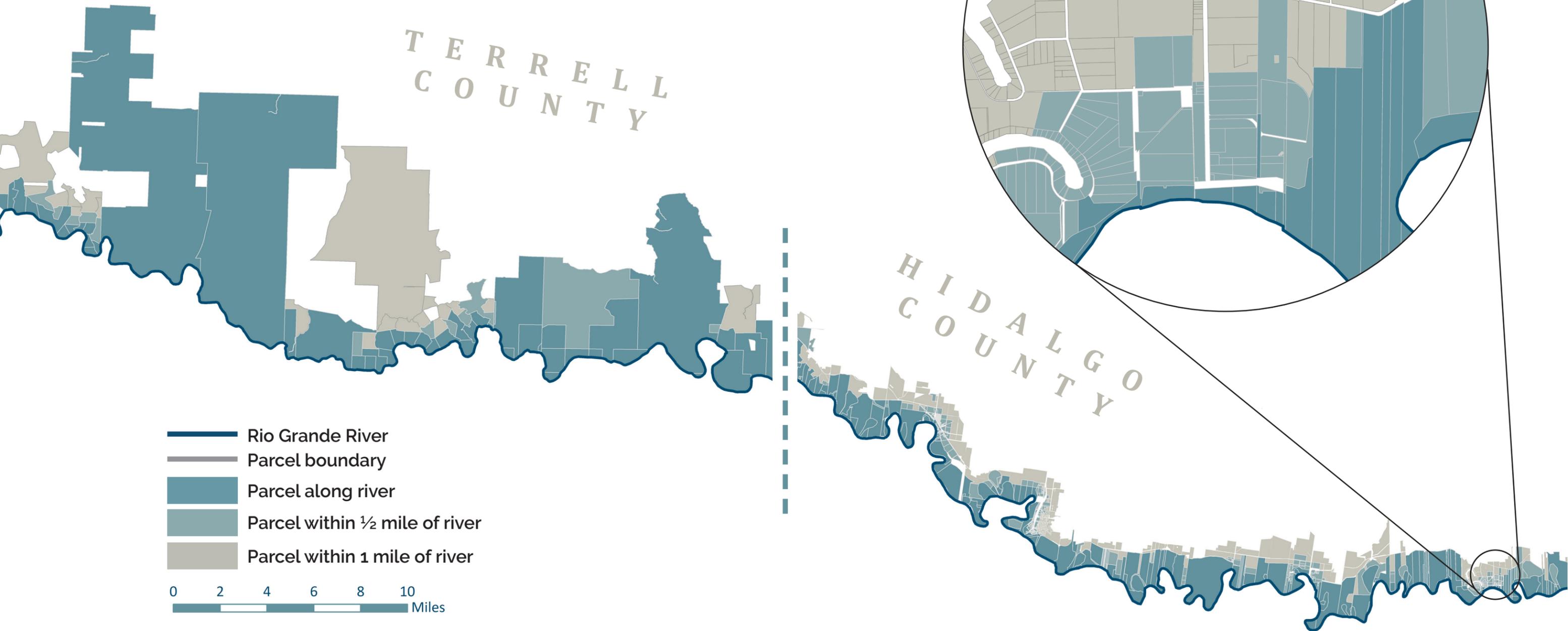
*Current digital land parcel data not available for Hudspeth and Starr counties.

Rural vs. Urban County

Not all counties are homogeneous. Land ownership patterns differ among rural and urban counties. Rural Terrell County parcels are large with varied shapes when compared to the smaller, uniform parcels of urban Hidalgo County. For the latter, Spanish porciones are immediately identifiable where water access was more important for farming and irrigation, as opposed to more arid western counties, where ranching that requires more space was prevalent.

Rural
(pop. 787)

Urban
(pop. 860,288)



Changes in Land Use

Texas has seen a steady trend in the loss of working lands over the last several decades. Texas Borderland counties follow suit with a 13% decrease in total working land acres and a 36% decrease in average operation size, representing the fragmentation and conversion of rural working lands collectively across the region (Table 4).⁶ Many factors, including population growth, rising land market values, and an aging landowner base, contribute to ownership change, land parcelization, and land use conversion of working lands (e.g., farm-to-residential development).⁸ By incorporating these and other land use change drivers, we developed a *Land Risk Index*, a visual representation of how these variables are likely to impact future land uses along Texas Borderland counties (Figure 4).

Table 4. Changes in working lands in Texas Borderland counties, 1997-2017.

County	Working lands (acres)			Average operation size (acres)		
	1997	2017	% Change	1997	2017	% Change
Trans-Pecos						
El Paso	247,431	141,701	-43%	467	216	-54%
Hudspeth	2,505,531	2,275,734	-9%	15,562	16,983	9%
Jeff Davis	1,485,092	1,376,338	-7%	15,470	17,875	16%
Presidio	1,702,399	1,840,888	8%	10,775	12,964	20%
Brewster	2,398,423	2,017,864	-16%	16,316	11,597	-29%
Terrell	1,302,480	834,419	-36%	13,568	9,817	-28%
Middle Valley						
Val Verde	1,768,855	1,471,377	-17%	6,432	2,787	-57%
Kinney	643,901	586,805	-9%	4,351	2,486	-43%
Maverick	476,329	434,466	-9%	2,335	1,282	-45%
Webb	2,188,035	1,844,858	-16%	4,067	2,812	-31%
Zapata	420,595	437,918	4%	1,107	1,063	-4%
Lower Valley						
Starr	671,346	571,483	-15%	889	425	-52%
Hidalgo	659,696	623,875	-5%	389	256	-34%
Cameron	383,648	271,480	-29%	349	191	-45%
Total	16,853,761	14,729,206	-13%	2,682	1,705	-36%

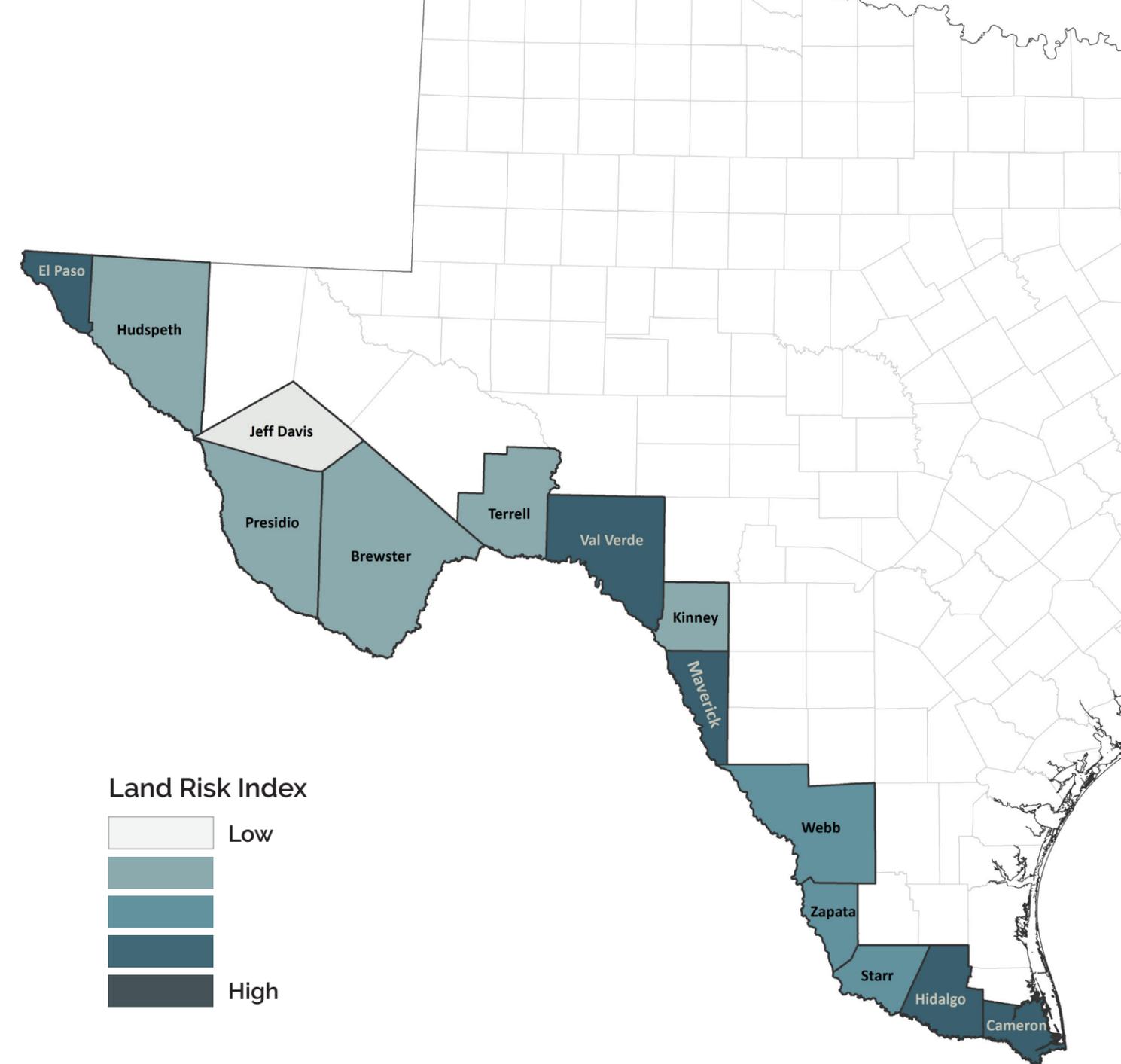
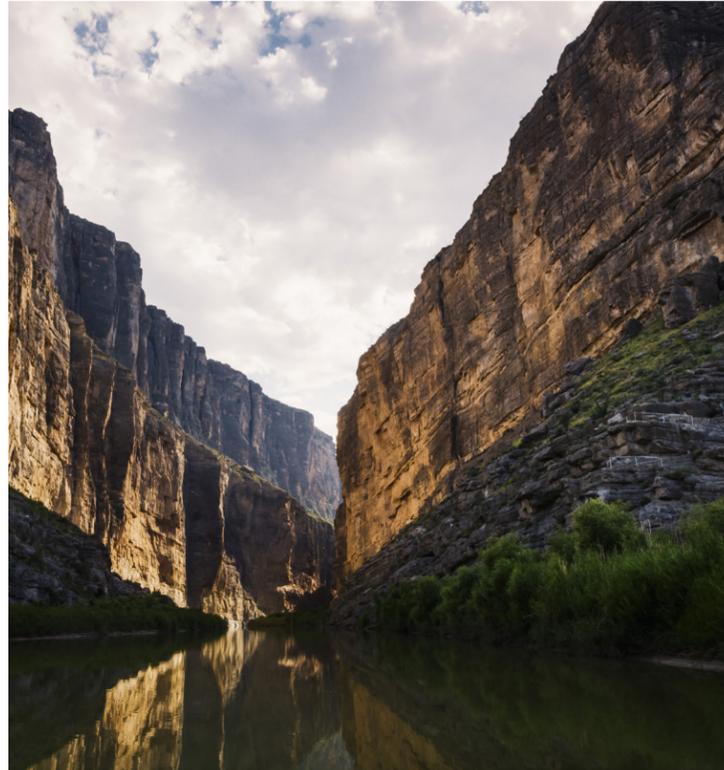


Figure 4. Projected land fragmentation risk based on Texas Land Trends data, 2019.

Texas Land Trends data suggest that farm and ranch operation profitability and parcel size are related, where operations may be increasingly less profitable as they get smaller (i.e., <150 acres).⁶ As a result, when rural land is no longer profitable, future traditional agricultural uses are threatened and degradation of "ecosystem services" and other public benefits provided by these private lands can be expected (e.g., recharge of groundwater resources due to increasing impermeable surfaces).

Final Thoughts

Increases in population density along Texas Borderland counties have altered much of its historically rural landscape. Key factors for these changes (e.g. population growth, rapid urbanization, rising land market values, among others) will continue to influence land fragmentation rates and conversion, ultimately impacting the associated public benefits rural working lands provide to the region. Although Texas Borderland counties are perceived as homogeneous, their rural and urban county needs vary, and each will face unique natural resource stewardship challenges in the years to come.



References

1. Lang, A. S. and C. Long. 2016. Handbook of Texas online: land grants. Texas State Historical Association, University of Texas at Austin. Austin, TX, USA. <https://tshaonline.org/handbook/online/articles/mp01>
2. Texas State Historical Association. 2018. Texas almanac: population history of counties from 1850–2010. University of Texas at Austin. Austin, TX, USA. <https://texasalmanac.com/sites/default/files/images/topics/ctypophistweb2010.pdf>
3. Texas Demographic Center. 2018. 2018 Texas Population Projections Data Tool. Austin, TX, USA. <<http://txsdc.utsa.edu/Data/TPEPP/Projections/Tool?fid=DBEFA002729C4E6C95D1663653DF084D>>. Accessed 8 January 2019.
4. Texas Natural Resources Information System. 2019. Original Texas Land Survey. Austin, TX, USA. <<https://data.tnris.org/>>. Accessed 8 January 2019.
5. Texas A&M Natural Resources Institute. 2018. Challenges to rural Texas natural resources. Pages 133–183 in A report for the future of rural Texas: a Texas Tribune symposium. Texas Rural Funders Collaborative. Austin, TX, USA. https://nri.tamu.edu/media/2358/texas2036_ruralbook_chapter7.pdf
6. Texas Land Trends. 2014. Status update and trends of Texas rural working lands. Texas A&M Institute of Renewable Natural Resources. Texas A&M University, College Station, TX, USA. <http://txlandtrends.org/files/lt-2014-report.pdf>
7. White, S., L. B. Potter, H. You, L. Valencia, J. A. Jordan and B. Pecotte. 2017. Texas Migration. Texas State Demographic Center. Austin, TX, USA. http://demographics.texas.gov/Resources/publications/2017/2017_01_11_TexasMigration.pdf
8. Lund, A.A., L.A. Smith, A. Lopez, and R.R. Lopez. 2017. Texas landowner changes and trends. Texas A&M Natural Resources Institute, Texas A&M University. College Station, TX, USA. <http://txlandtrends.org/media/1018/ltchanginglandownerfinal2.pdf>

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CONTACT US

Texas A&M Natural Resources Institute
578 John Kimbrough Blvd.
College Station, TX 77843

979.845.1851
txlandtrends@tamu.edu
txlandtrends.org