Colonias Investment Areas: A More Focused Approach

Keith Wiley
Lance George
Housing Assistance Council

Sam Lipshutz
Amazon.com, Inc.

Abstract

The Federal Housing Finance Agency's (FHFA) Duty to Serve (DTS) regulations require Fannie Mae and Freddie Mac (the Government-Sponsored Enterprises, or GSEs) to engage in efforts that increase liquidity in home mortgage lending markets for select rural, high-need areas. Unincorporated communities along the U.S.-Mexico border, known as "colonias," are one of these high-need areas. Colonias are informal housing development communities, usually with majority Hispanic populations, that experience extremely high poverty rates and substandard living conditions. These communities may lack drinking water, sewer treatment services, paved streets, high-quality housing, and standard mortgage finance. As a result, they contain some of the worst living conditions in the United States. Policies like DTS seek to ameliorate through better access to affordable mortgage financing.

This paper explores an effort, supported by Fannie Mae, to plan, target, and evaluate their DTS efforts in colonias. The approach focuses on the concept of "Colonias Investment Areas," which are census tracts containing government recognized colonias. Activities in these Colonias Investment Areas will then be viewed as impacting colonias. A review of housing and mortgage lending data describes Colonias Investment Areas, noting their differences and their commonalities. The data show there is still a need for more affordable home lending options in areas with substandard housing. The ensuing policy discussion details the strengths and limitations of the colonias investment approach and challenges, such as limited housing and reliance on informal self-help construction, that could hinder efforts. Policies that support assisted self-help housing and small-dollar lending might be part of an effective solution.

Introduction

The Housing and Economic Recovery Act of 2008 established an obligation for Government-Sponsored Enterprises (GSEs) to increase liquidity in underserved housing markets, including high-need regions. High-need regions, which often contain disproportionately large rural and minority populations, experience chronic economic distress and high poverty rates. Colonias, unregulated developments with substandard living conditions near the U.S.-Mexico border, make up one of these regions.

As shown in exhibit 1, the region within 150 miles of the U.S.-Mexico border includes substantial parts of four states, with most border region counties having majority Hispanic populations. The region is home to more than 33 million people and has experienced rapid growth over the last 40 years; its population has increased 82 percent since 1980, nearly twice as fast as the 43 percent growth rate for the U.S. population overall. This growth, coupled with low wages and a lack of affordable housing, fueled the formation of colonias, which now comprise at least 2,459 communities. Colonias often contain substandard living conditions and extremely high poverty rates. Thirty-three of the 109 counties near the Mexico border are persistently poor,[1] meaning they have experienced poverty rates of 20 percent or more for 3 consecutive decades. Twenty-seven of these persistent poverty counties have majority Hispanic populations (see exhibit 1), and they are home to more than 90 percent of all recognized colonias. At the same time, access to affordable home financing, which could help lower owner costs and facilitate improved neighborhood conditions, is rare. Policies like Duty to Serve (DTS) aim to address this need by improving access to affordable finance.

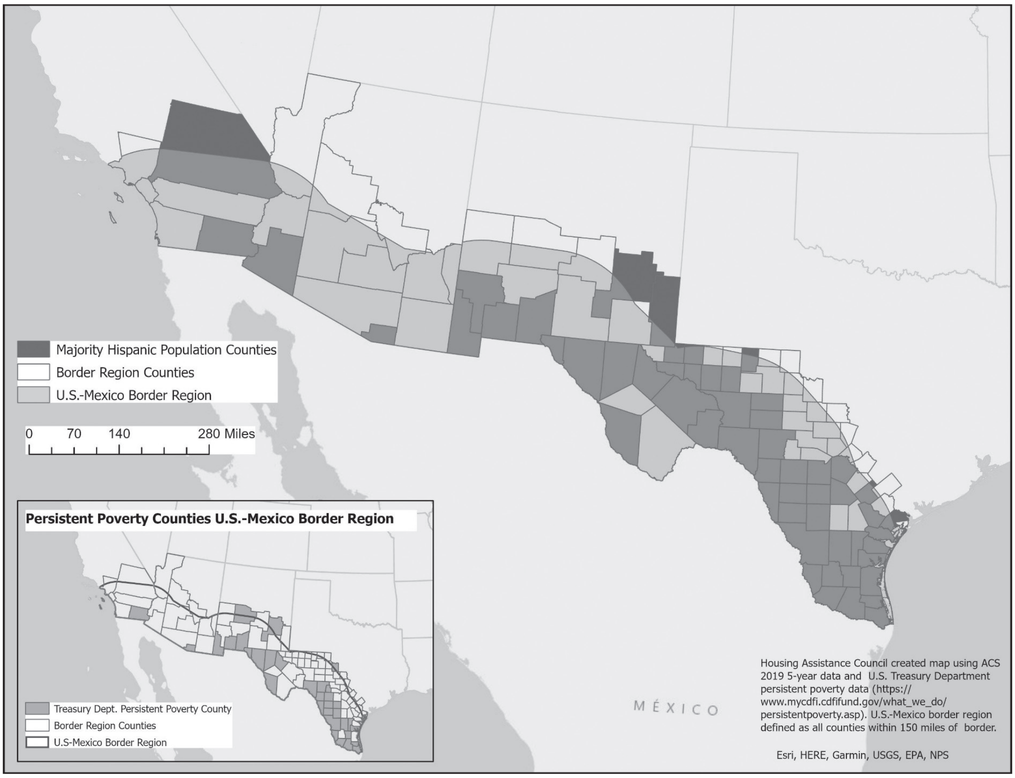
This paper is part of a project to better target DTS efforts to impact colonias. The research involved identifying government-recognized colonias, locating them geographically, and aggregating this information to identify all colonia-containing census tracts, referred to as “Colonias Investment Areas.” Fannie Mae will use these Colonias Investment Areas for planning, targeting, and evaluating its DTS work. By focusing efforts on Colonias Investment Areas, Fannie Mae would help ensure investments are either directly or indirectly affecting colonias and nearby colonia-like developments. Using census tracts represents a balanced approach—using the larger county geography would be too broad and using small neighborhood boundaries would be too specific. A database of Colonias Investment Areas, containing records for each of the four states bordering Mexico, brings this information together in one location.[2]

[1] As of March 3, 2021, the Department of Treasury makes a list of persistent poverty counties available for download at https://mycdfi.cdfifund.gov/what_we_do/persistentpoverty.asp.

[2] As of February 27, 2021, this information is available at the following Fannie Mae website: https://colonias-investment-areas.carto.io/.

Exhibit 1

United States-Mexico Border Region



USGS = United States Geological Survey. EPA = United States Environmental Protection Agency. NPS = The National Park Service.

Background

U.S.-Mexico Border Region

In the United States, the term “colonias” has been applied to unincorporated communities in California, Arizona, New Mexico, and Texas along the U.S.-Mexico border characterized by high poverty rates and substandard living conditions. The overwhelming majority of colonia residents are Hispanic, particularly in Texas, where they make up an estimated 96 percent of the colonia population (Federal Reserve Bank of Dallas, 2015). Colonias in the other three border states are less homogenous, however. In practical terms, colonias are defined by what they lack, such as potable water, water and wastewater systems, paved streets, and standard mortgage financing.

Despite being categorized together, colonias vary extensively within the border region, from small clusters of homes located near agricultural employment opportunities to established communities whose residents commute to nearby urban centers (Núñez-Mchiri, 2009). Colonias also have diverse histories. Some emerged in the last 50 years, but others have existed since the 19th century. The unmet need for affordable housing was a key factor driving the demand for homes in colonia developments in both recent and historic colonias (Federal Reserve Bank of Dallas, 1996), but various factors led to colonia development within each border state. Because colonias in Texas are more visible than those in other states, their characteristics tend to guide common perceptions and government policy (Mukhija and Monkkonen, 2006).

Informal Housing Development

Research has shown that similar substandard developments occur in other parts of the United States. Ward and Peters (2007) classify colonias as a type of peri-urban, "informal" housing development. In slightly different forms, this peri-urban development occurs in areas far from the U.S.-Mexico border region, such as Greensboro, North Carolina. Ward and Peters' research also details the differences in housing that can be seen even among border colonias—manufactured homes, site-built, etc. However, the term "colonias" is the common reference point in that it refers to informal, substandard housing developments located near the U.S.-Mexico border.

Lack of Regulations/Oversight

Colonias largely resulted from lax land regulations, particularly over the last few decades (Donelson and Holguin, 2001). For much of the 20th century, county governments lacked the power to regulate the subdivision of land that lies outside the jurisdiction of city governments. Without these controls in place, landowners could subdivide and sell their property without the necessary infrastructure (Parcher and Humberson, 2007).

The contract-for-deed system also facilitated the proliferation of colonias, particularly in Texas. The buyer makes payments directly to the developer through a contract for deed, and the land title remains with the developer until the amount is paid in full. These arrangements often involve high-interest rates, and many are not recorded with the county clerk (Federal Reserve Bank of Dallas, 1996). If a single payment is missed, the developer may foreclose on the property, and the buyer will lose their entire investment (Parcher and Humberson, 2007).

State Policy Response

State laws enacted over the past 20 to 30 years have attempted to end the formation of colonias. These laws, such as Texas's Model Subdivision Rules, require certain infrastructure, like water and wastewater systems, to be in place for subdivided land. Research exploring the impact of these policies on lower-cost developments finds improved infrastructure but a continuation of substandard housing units (Durst and Ward, 2015). In addition, these communities still lack access to affordable finance, and there is considerable turnover in lot ownership (Olmedo and Ward, 2016). Although these new developments are no longer officially considered colonias, they are in many ways the same and are often located near state-recognized colonias (Durst 2016).

Underlying Problems

A lack of affordable housing remains an underlying cause for such developments. As Durst (2016: 155) notes, "colonias have historically been treated as a water and wastewater issue, rather than a broader problem of concentrated poverty and the lack of affordable housing." Most housing units in colonia-type communities are self-built in piecemeal fashion because resources available to the property purchasers are extremely limited. The higher prices associated with Model Subdivision lots, which come with access to basic water and sewer-treatment infrastructure, can have the unintended consequence of making them unaffordable to some and possibly result in some lot owners having less money to spend on housing (Olmedo and Ward, 2016).

Policymaking Colonia Definitions

In addition to affordability, a significant policymaking challenge is the definition of colonia. This is to be somewhat expected given that these are informal developments starting in the urban periphery/rural areas with few land use regulations. Land use is not static, so what exists at any one time will change. Nevertheless, it is important to target policy efforts accurately, and this paper explores the concept of Colonias Investment Areas and its usefulness to support DTS efforts to improve liquidity in colonia mortgage lending markets.

Before implementing state model subdivision regulations in the late 1980s and early 1990s, federal, state, and local governments sought to address the problems associated with unregulated and substandard developments and stop creating new ones. State and local governments designated communities as colonias, making them eligible for certain types of federal assistance. In some cases, state governments and federal agencies mapped colonia locations and linked data sources together to better manage assistance efforts (Parcher and Humberson, 2007). This work became the foundation for the resources and identified colonia communities used by this study.

In particular, the Cranston-Gonzalez National Affordable Housing Act of 1990 and its dedication of federal funds for addressing living conditions in colonias spurred activity to better understand where colonia communities were located and their needs. Researchers also credit the debate over the North American Free Trade Agreement (NAFTA) in the early 1990s with putting a national spotlight on colonias and increasing government involvement to improve living conditions in the colonias (Parcher and Humberson, 2007).

Cranston-Gonzalez National Affordable Housing Act Definition

The Cranston-Gonzalez National Affordable Housing Act served as a primary benchmark for defining "colonia" in the United States. Under the Act, a colonia is defined as:

> *any identifiable community that—(A) is in the State of Arizona, California, New Mexico, or Texas; (B) is in the area of the United States within 150 miles of the border between the United States and Mexico, except that the term does not include any standard metropolitan statistical area that has a population exceeding 1,000,000; (C) is designated by the state or county in which it is located as a colonia; (D) is determined to be a colonia on the basis of objective criteria, including lack of potable water supply, lack of adequate sewage systems, and lack of decent, safe, and sanitary housing; and (E) was in existence and generally recognized as a colonia before [November 28, 1990].*[3]

[3] The Cranston-Gonzalez National Affordable Housing Act of 1990, as of March 3, 2021, can be accessed at https://www.govtrack.us/congress/bills/101/s566/text.

The statutory definition targets funding from the U.S. Department of Housing and Urban Development (HUD) and the U.S. Department of Agriculture's (USDA) Rural Development programs to colonias. With this seminal entry into the issue of housing in colonias, the federal law and its language have been used as the underpinning (or replicated) for many definitions and classifications regarding the U.S.-Mexico border and colonia communities in research, policy, and governmental programs and efforts.

The "border colonias region" refers to the area within 150 miles of the border, excluding large metropolitan areas—those with populations of 1 million or more. This geographic distinction is important because research has identified similar types of developments occurring in other areas that would not be considered colonias as defined (Ward and Peters, 2007).

HUD List of Designated Colonias

A key component of the Cranton-Gonzalez Act's definition is the requirement that state governments identify communities as colonias to be eligible to receive certain federal funding. Because the four U.S.-Mexico border states are obligated to use 10 percent of their Community Development Block Grant (CDBG) monies on border colonias, HUD makes publicly available a list of designated colonias for all four states.[4]

There are a few important considerations regarding HUD-designated colonia listings. The state lists may not always precisely capture colonias. For example, the city of Douglas, Arizona, is listed as a colonia in its entirety, but a U.S. Geological Survey effort at mapping colonias in this town identifies specific neighborhoods, not the entire community (Norman et al., 2004) . The state lists, particularly when they refer to unincorporated areas, are not easily identified. For example, one unincorporated California colonia is listed as simply "Subdivision." Because of these issues, additional work would be needed to translate colonia locations into census geographies.

An additional issue is that the federal definition restricts colonias to communities established before November 28, 1990. Similarly, communities created after that date, which are the same areas and in almost all ways identical to HUD recognized colonias (Durst, 2016), are not program-eligible. Although the HUD colonia CDBG set aside is an important federal policy, the exclusion of assistance to developments established after 1990 limits the policy's ability to address the proliferation of colonia-type developments in the region.

Additional Federal Colonia Definitions

Other federal agency definitions retain the substandard living conditions and missing infrastructure requirements; however, the distance to U.S.-Mexico border requirements vary. The Environmental Protection Agency (EPA) definition, for example, considers only communities within 62 miles of the U.S.-Mexico border (USDA/EPA, 2014). The EPA distance to the border reflects NAFTA language from the early 1990s (Smith, 1993). The USDA's Rural Utility Service colonia definition, on the other hand, lacks a distance requirement altogether:

[4] The following HUD link, active as of March 3, 2021, contains a single 2012 list of recognized colonias by state: https://www.hudexchange.info/resource/2388/colonia-list/.

> Any identifiable community designated in writing by the State or county in which it is located; determined to be a colonia on the basis of objective criteria including lack of potable water supply, lack of adequate sewage systems, and lack of decent, safe, and sanitary housing, inadequate roads and drainage; and existed and was generally recognized as a colonia before October 1, 1989. (USDA/EPA, 2014: 1)

These programmatic differences lead to confusion and speak to the need for information to be organized and standardized in a way that aids analysis and program administration. Establishing Colonias Investment Areas or something similar would combine these disparate sources of information into a standardized designation of service areas that could guide policy efforts.

This study operationalizes this approach for identifying Colonias Investment Areas. Next, the analysis describes the housing and mortgage lending characteristics of Colonias Investment Areas, pointing out the areas of need and how the area characteristics fit within what is known about these areas. Finally, the report discusses the benefits and challenges to using such an approach.

Methodology

This research project focused on identifying all census tracts within 150 miles of the U.S.-Mexico border that contain a federal, state, or locally government-recognized colonia community. These colonia-containing census tracts are labeled “Colonias Investment Areas” because they will be the target of future investment efforts. In addition to colonia community location data, this paper uses American Community Survey 2018 5-year estimates and Home Mortgage Disclosure Act (HMDA) mortgage lending data for 2015, 2016, and 2017 to explore Colonias Investment Areas.

Creating Colonias Investment Area Database

The approach to developing Colonias Investment Areas and determining which census tracts contain colonias involves several basic processes.

Identification

The Federal Housing Finance Agency’s Final Duty to Serve rule notes that a colonia needs to meet “the definition of a colonia under a federal, state, tribal or local program.”[5] Using a similar approach, this research considers only communities that a federal, state, or local government has identified as colonias. Classification as a colonia by a government entity often indicates the community qualifies for a program or resource specifically targeting colonias. The term “recognized colonia” refers to these government-identified colonias.

There is no universal list of recognized colonias. The authors created a separate list for each U.S.-Mexico border state by compiling disparate federal, state, and local government lists of colonias. For example, the Arizona list required consolidating information on recognized colonias from HUD, USDA-EPA, Arizona Department of Housing, Cochise County, Graham County, and Pima County. Exhibit 2 provides a list of the resources this research used to identify colonias. The process of identifying colonias involved collecting and categorizing all unique cases of communities

[5] Published in the *Federal Register* as a final rule on January 1, 2016. 75 Fed. Reg. 55930.

identified by multiple resources, with no preference made for one resource over another. The study identified 2,459 unique colonia records in the four states along the U.S.-Mexico border through this process.[6]

Exhibit 2

Resources Identifying Colonia Communities

Resource	State(s) Covered	Website
Arizona Department of Housing	Arizona	https://housing.az.gov/arizona-designated-colonia
Cochise County (AZ) Development Services Program	Arizona	https://www.cochise.az.gov/development-services/home
Graham County (AZ) Information Technology Department—GIS	Arizona	https://www.graham.az.gov/228/Information-Technology
HUD CDBG Colonia Set Aside Qualifying Communities*	Arizona, California, and New Mexico	https://www.hudexchange.info/programs/cdbg-colonias/
Imperial County (CA) Community and Economic Development Agency	California	http://www.imperialcountyced.com/colonias/
Office of Attorney General of Texas	Texas	https://coloniadata.oag.state.tx.us/
Pima County (AZ) Information Technology Department—GIS	Arizona	http://webcms.pima.gov/government/geographic_information_systems/
University of New Mexico, Bureau of Business & Economic Research	New Mexico	http://bber.unm.edu/colonias
USDA-EPA. 2015. U.S.-Mexico Border Needs Assessment & Support Project: Phase II Assessment Report**	Arizona, California, New Mexico, and Texas	https://www.rcap.org/wp-content/uploads/2016/03/RCAP_Colonias-Phase-II-Assessment-Report_FINAL_web.pdf
USGS CHIPs Project***	Texas	https://pubs.usgs.gov/fs/2008/3079/

CDBG = Community Development Block Grant. GIS = geographical information system. USDA-EPA = U.S. Department of Agriculture-Environmental Protection Agency. USGS CHIPs = U.S. Geological Survey Colonia Health, Infrastructure, and Platting Status.

**Past HUD web pages where each state list of colonias was found are no longer active. This is a general url with program information. An old version of the colonia list can be found here: https://www.hudexchange.info/resource/2388/colonia-list/*

***An additional source that shows the colonia locations plotted is here: https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=a5b2efdea2a844029dbf45e19b014946&layerId=0*

****The original web-mapping portal is not available; this website refers to a document that explains the program.*

Location, Aggregation, and Compilation

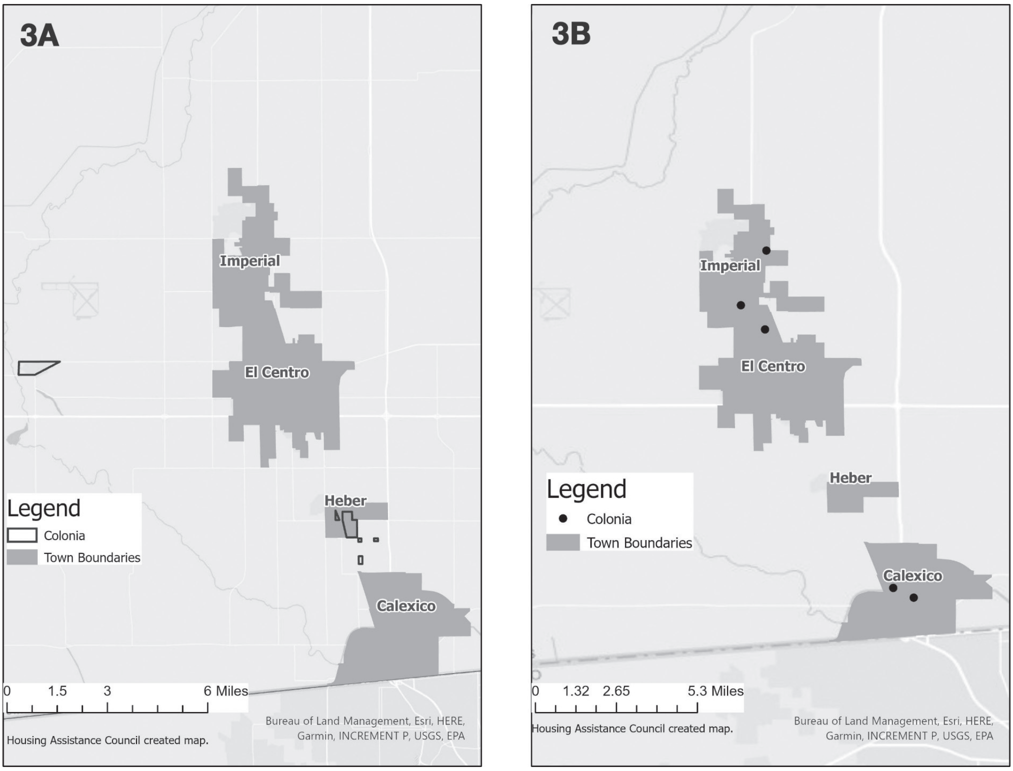
In many cases, the information used to compile the list of recognized colonias also included their geographic location data. Location data frequently came in the form of geographical information system (GIS) shapefiles, which include polygons showing boundaries and points denoting the center point of the polygon. Exhibit 3A and B provides visual examples of the difference between polygon and point formats. See exhibit 4 for a list of location data highlighting where this analysis

[6] The USDA-EPA 2015 Study information included 50 communities for which the source listed Rural Community Assistance Partnership (RCAP) staff, not a government agency. This meant the case was identified by the people completing the USDA-EPA study but had not been recognized by a government entity. These cases were not included in this analysis. These were the only cases not included.

relied on polygons and/or where it relied on points.[7] The information type varies. Future data improvements will hopefully result in the use of more detailed polygons.

Exhibit 3A and B

A: California Colonias Polygon Format; B: California Colonias Point Format



USGS = United States Geological Survey. EPA = United States Environmental Protection Agency. NPS = The National Park Service

Exhibit 4

Identified Colonias by Method Located

Colonias Location Status and Format	New Mexico*	Arizona	California	Texas
Total Colonias	145	114	34	2,166
Colonias Located	142	100	32	2,166
Colonias Points	24	66	23	0
Colonias Polygons	118	34	9	2,166

**Most of the New Mexico data came from University of New Mexico Bureau of Business & Economic Research work that identified census blocks containing colonias in 2009. See the following url for more information on these projects: https://bber.unm.edu/nm-colonia-maps.*

Source: Authors' calculations based on data from the following: Arizona Department of Housing, Cochise County(AZ) Development Services Program, Graham County(AZ) Information Technology Department-GIS, HUD CDBG Program - Colonia Set Aside Qualifying Communities, Imperial County(CA) Community and Economic Development Agency, Office of Attorney General of Texas, Pima County(AZ) Information Technology-GIS Department, University of New Mexico, Bureau of Business & Economic Research, USDA-EPA. 2015. U.S.-Mexico Border Needs Assessment & Support Project: Phase II Assessment Report, and USGS Chips Project.

[7] The University of New Mexico, Bureau of Business & Economic Research (UNMBBER) already identified the underlying Census blocks for 118 of New Mexico's colonias.

Individual colonia communities were then linked to their census blocks. Census blocks are the lowest level of standard census geography for which the Census Bureau collects and tabulates census information. If 5 percent or more of a census block's land area contained a colonia, it was classified as a colonia census block.[8] If a colonia was represented by a point, the census block containing the point was identified as a colonia census block.[9] A final visual inspection confirmed the results and identified any errors.[10]

Census blocks nest within census tracts, making it possible to aggregate the individual colonia to the census tract level. Aggregating the data produced a count of colonia census blocks for each census tract. Finally, the study classified all census tracts containing at least one colonia census block as "Colonias Investment Areas." Exhibit 5 provides an example highlighting how polygons and points relate to Colonias Investment Areas in Graham County, Arizona.

As a final step in creating the database, the authors compiled and normalized Colonias Investment Areas (census tracts) from each state to provide a consistent database of all Colonias Investment Areas across the four border states.

Geography of Colonias Investment Areas

Using this approach, this analysis identified 446 distinct Colonias Investment Areas representing approximately 6 percent of the U.S.-Mexico border region's census tracts. Exhibit 6 breaks down the distribution of Colonias Investment Areas by state and relative to their share of U.S.-Mexico border region census tracts and population, both in general and for rural areas specifically (using the Federal Housing Finance Agency's [FHFA] DTS rural definition).[11] Although most of the U.S.-Mexico border region population does not live in a Colonias Investment Area, nearly 2.5 million people live in one. Approximately a third of all rural census tracts contain a colonia. Exhibit 7 highlights geographic coverage of the Colonias Investment Areas. Colonias Investment Areas represent census tracts where at least one colonia is located and the entire area does not constitute a specific colonias community.

[8] The 5 percent colonia threshold is to ensure that colonia-census block overlap is real and not the result of digitization errors. Digitization errors are slight inaccuracies that can occur when community boundaries are drawn which could result in an apparent overlap between geographies (colonias and census blocks) when one does not actually exist. The threshold is meant to remove such cases.

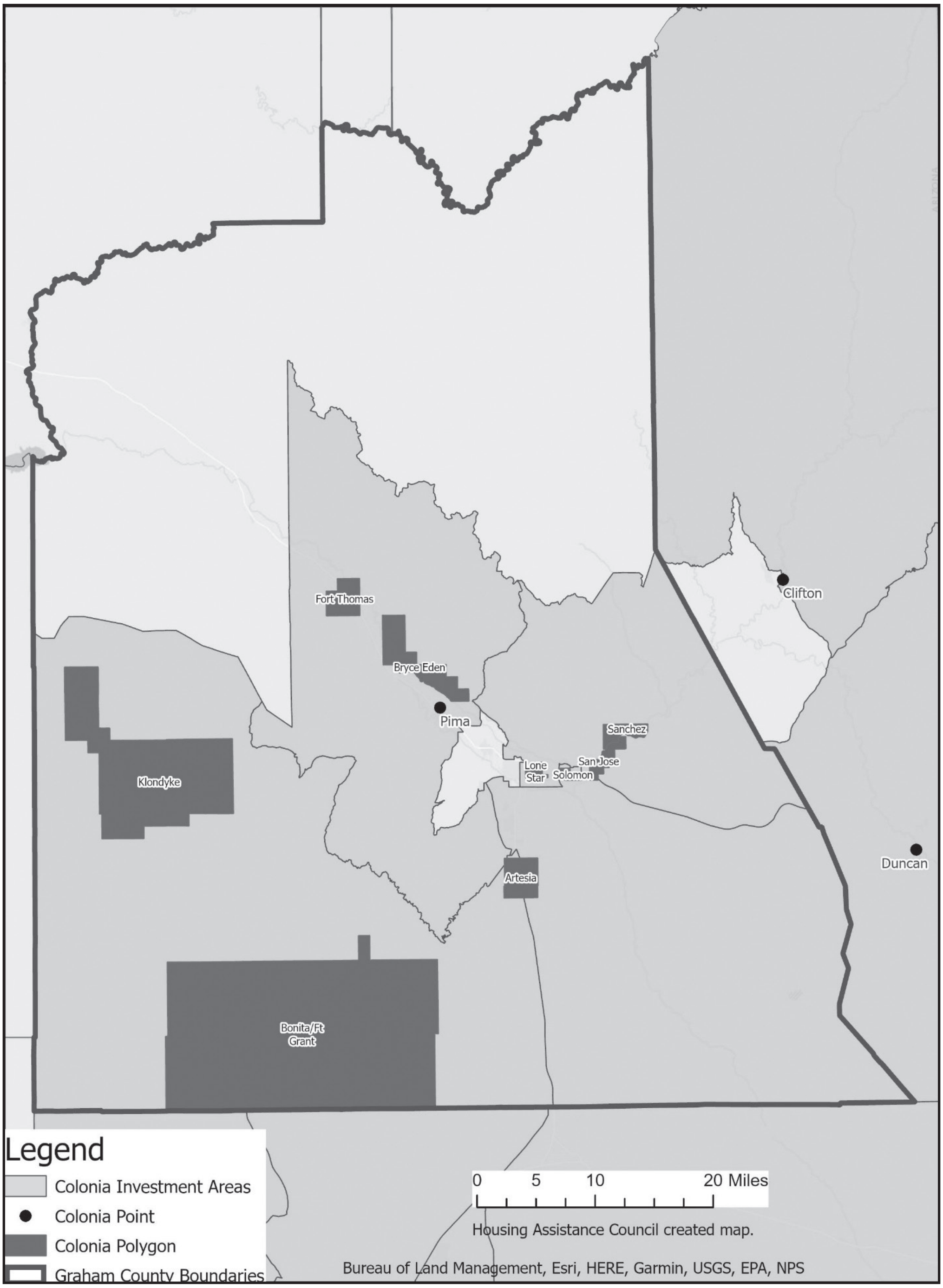
[9] Only the census block containing the colonia point file is classified as such. There is no way to estimate if other census blocks are involved with the colonia.

[10] In general, this study's approach has similarities to the one taken by a 2010 University of New Mexico Bureau of Business and Economic Research (UNMBBER) study, which involved identifying New Mexico census blocks containing colonias. The UNMBBER study used visual inspection of maps/imagery, not threshold or calculation as done here, to identify colonia census blocks. The UNMBBER effort, however, did not go beyond identifying census blocks.

[11] The FHFA DTS rural definition (used 2018 vintage in this report), as of June 21, 2021, can be found at the following url: https://www.fhfa.gov/DataTools/Downloads/Pages/Duty-to-Serve-Data.aspx.

Exhibit 5

Graham County, Arizona Colonias and Colonias Investment Areas



USGS = United States Geological Survey. EPA = United States Environmental Protection Agency. NPS = The National Park Service.

Exhibit 6

Colonias Investment Area Measures

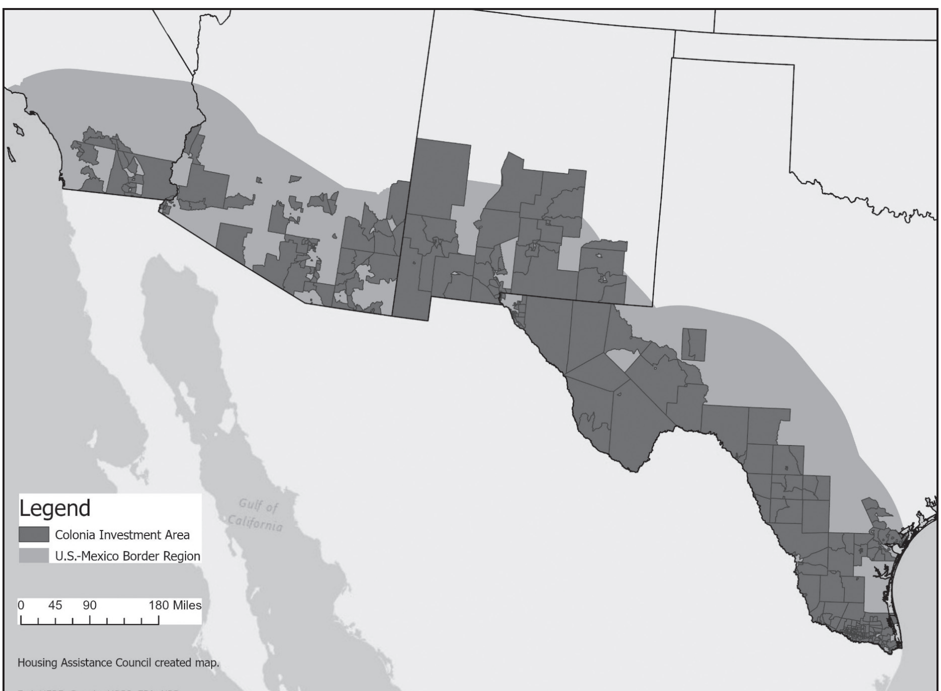
	Census Tracts				Population			
	Total		Rural		Total		Rural	
Border States	U.S.-Mexico Border Region	Colonias Investment Areas	U.S.-Mexico Border Region	Colonias Investment Areas	U.S.-Mexico Border Region	Colonias Investment Areas	U.S.-Mexico Border Region	Colonias Investment Areas
Arizona	1,377	94	138	54	6,052,597	396,551	510,885	201,739
California	4,311	23	125	16	20,574,134	138,750	361,016	82,534
New Mexico	107	58	72	41	471,080	273,249	278,570	166,738
Texas	1,205	271	267	102	6,095,514	1,652,150	1,074,066	453,289
Total	7,000	446	602	213	33,193,325	2,460,700	2,224,537	904,300

Source: Authors' calculations based on data from 2018 American Community Survey 5-year estimates

More than 90 percent of the census tracts in the U.S.-Mexico border region are considered urban, with many in large cities (Los Angeles, Phoenix, and San Diego) and containing no colonias. As exhibit 7 shows, however, most of the region's land area is in Colonias Investment Areas, reflecting the rural nature of many colonias.

Exhibit 7

Colonias Investment Areas



USGS = United States Geological Survey. EPA = United States Environmental Protection Agency. NPS = The National Park Service.

Colonias Investment Areas Most Common in Texas

Texas contains 61 percent of all Colonias Investment Areas. Although 33 counties in Texas have at least one colonia, these communities are largely concentrated in a few areas, notably the lower Rio Grande Valley. For example, Hidalgo County is home to approximately 40 percent of Texas's recognized colonias (over 850) and more than three times the number of colonia communities found in Arizona, California, and New Mexico combined. Exhibit 8 shows the concentration of Texas colonias in counties in two regions—southeast and southwestern parts of the state. This level of concentration, along with the fact that colonias have a relatively small land size in Texas compared with other border states, is reflected in the much higher average number of colonias in Texas Colonias Investment Areas compared with the other border states (1.5,1.4, 2.9, and 8.4 for Arizona, California, New Mexico, and Texas, respectively).

This comparison of numbers of colonias across states is not particularly useful because there is no standardization across states or public entities for identifying colonia communities. For example, colonias in Texas tend to be an identified street or block, whereas, in other states, like California, an entire town might be defined as a colonia. This means a relatively small area in Texas might have multiple colonias, whereas another state might consider the whole area to be a single colonia.

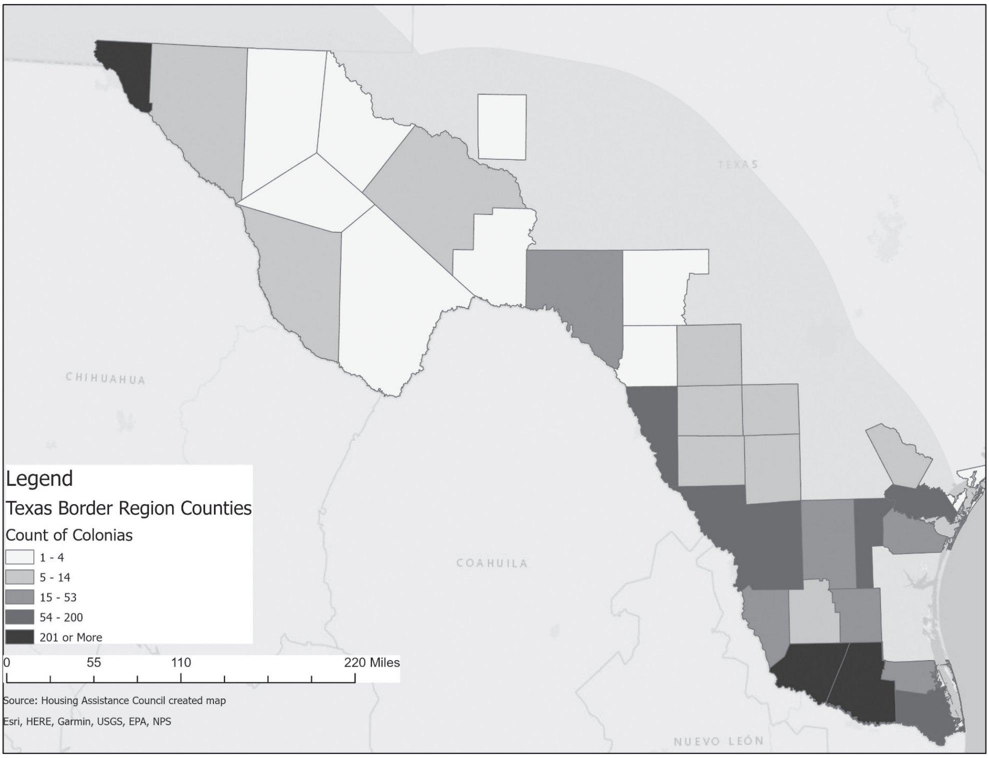
Colonias Are Not Just a Texas Phenomenon

Each of the four border states contains a substantial number of Colonias Investment Areas. Even California, with less than 1 percent of all recognized colonias, is home to 23 Colonias Investment Areas. Despite different demographic and housing characteristics, the relatively broad coverage of these communities indicates that colonias are not just a Texas issue.

Most of the census tracts in the border region of New Mexico are classified as Colonias Investment Areas, reflecting the area's rurality. Two-thirds of the census tracts in the New Mexico border region are rural. New Mexico's border region is unique in that it does not contain a major metropolitan area.

Exhibit 8

Count of Colonias in Texas by Counties



USGS = United States Geological Survey. EPA = United States Environmental Protection Agency. NPS = The National Park Service.

Development Patterns

Colonias are most often associated with rural or exurban fringe areas, where the subdivision and sale of unincorporated land without access to basic infrastructure (roads, water, sewer, etc.) is most likely to occur. Overall, 48 percent of Colonias Investment Areas are classified as “rural” census tracts under FHFA’s DTS criteria. The overall rurality patterns vary by state, however. Seventy percent of California and New Mexico’s Colonias Investment Areas and 57 percent of Arizona’s Colonias Investment Areas are rural.

A review of Texas development patterns explains why less than one-half of all Colonias Investment Areas are rural. The vast majority of Texas colonias communities are in South Texas, which has experienced dramatic urbanization since the 1960s. For example, Hidalgo County’s population was 181,535 in 1970 and more than quadrupled to 865,939 by 2018. The original rural/exurban fringe areas where many colonias developments originated are now considered urban. If Hidalgo County Colonias Investment Areas were not included, most of Texas’s Colonias Investment Areas (57 percent), as well as a majority of all Colonias Investment Areas (60 percent), would be considered rural. Exhibit 9 shows Colonias Investment Areas by rurality and shows how non-rural colonias are concentrated in a few areas.

Exhibit 9

Colonias Investment Areas by Duty to Serve Rural Classification

USGS = United States Geological Survey. EPA = United States Environmental Protection Agency. NPS = The National Park Service.

Findings

To better understand mortgage finance in Colonias Investment Areas, it is necessary to understand the current state of housing in them. It is also important to see how Colonias Investment Area housing data compare with what other studies find. This helps improve our understanding of the markets. The following analysis describes Colonias Investment Area housing characteristics and mortgage lending activity.

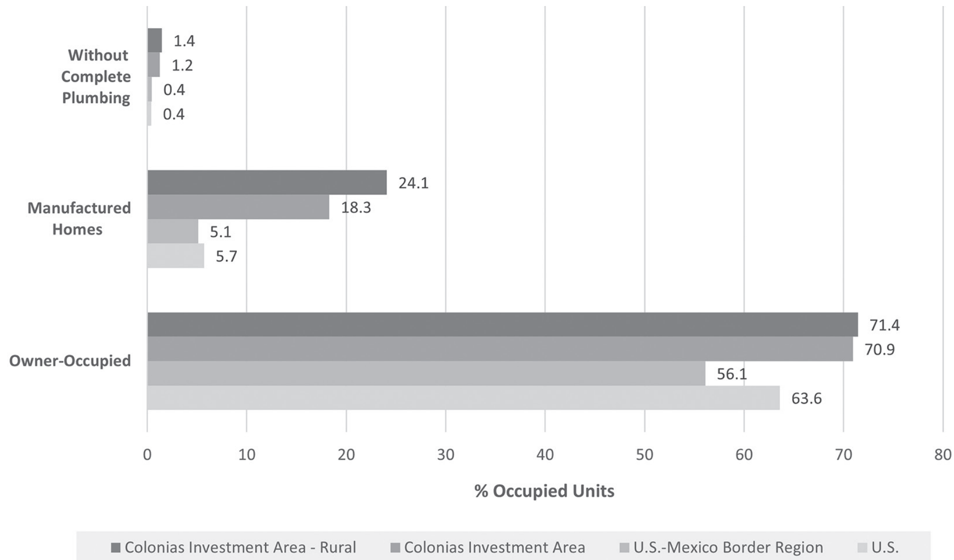
Housing Characteristics

Poor housing conditions play a central role in the recognition and designation of colonias, where the housing stock includes conventional stick-built houses, manufactured homes, and adobe structures. In older colonias, the substandard conditions are largely because of an old, deteriorating housing stock, whereas the newer colonias contain units that were not built to meet code. The development process in colonias primarily involves self-built housing in which lot purchasers build their homes incrementally as funds are available, a process that often starts with an older manufactured home and eventually, over the years, results in a site-built dwelling (Durst and Sullivan, 2019).

Exhibit 10 shows three important housing characteristics comparing conditions in Colonias Investment Areas to those in the United States and U.S.-Mexico border region in general. These characteristics illustrate that Colonias Investment Areas offer homeownership opportunities but often involve substandard housing and manufactured housing. As exhibit 10 indicates, conditions tend to be worse in rural Colonias Investment Areas.

Exhibit 10

Select Housing Characteristics



Source: 2018 American Community Survey 5-year estimates

Homeownership Predominates in Colonias Investment Areas

Households living in Colonias Investment Areas are primarily homeowners. Both in aggregate and at the state level, homeownership rates in Colonias Investment Areas exceed those for the U.S.-Mexico border region. Rural homeownership rates are high throughout the United States, so the elevated rates here suggest disproportionately higher homeownership levels in the suburban/urban parts of Colonias Investment Areas. Although homeownership is generally high in these markets, a portion of these households may have home or land financing elements that charge high fees or include usurious terms and fees.

New Mexico stands out because homeownership rates in its U.S.-Mexico border region are consistently higher in Colonias Investment Areas than in non-Colonias Investment Areas. There may be other factors at work that explain these differences. Such conspicuous findings show that colonias traits vary across the border states.

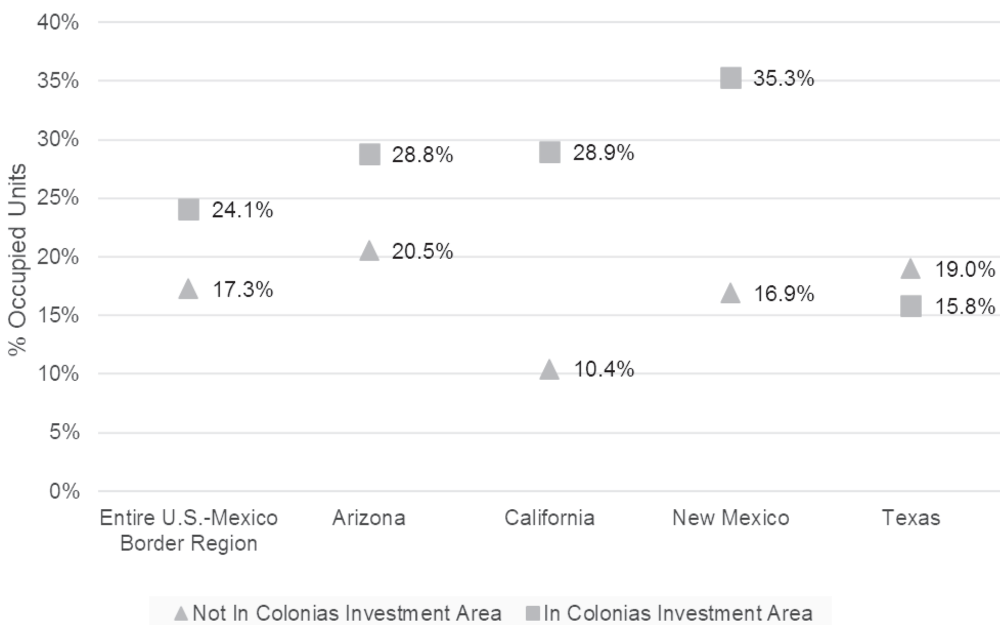
Manufactured Homes Common in Colonias Investment Areas

Manufactured housing is an important housing option in many rural communities and is particularly prevalent in Colonias Investment Areas. In total, as shown in exhibit 10, manufactured homes make up 18 percent of all occupied homes in Colonias Investment Areas compared with 4 percent for all other areas in the U.S.-Mexico border region. In the case of New Mexico, manufactured homes represent 32 percent of all occupied units in Colonias Investment Areas, which is much higher than the 14 percent for the remainder of the New Mexico border region.

The composition of housing structure type is not the same across Colonias Investment Areas in the border states, however. Exhibit 11 shows the share of manufactured housing in the rural portion of the U.S.-Mexico border region by Colonias Investment Area status and state. Rural is highlighted because manufactured housing is most prevalent in that geography. Manufactured homes are more prevalent in Arizona, California, and New Mexico Colonias Investment Areas than in Texas. In California's rural border region, 29 percent of all occupied units in Colonias Investment Areas are manufactured homes, compared with 10 percent for the remainder of the rural area. In Texas's rural border region, 16 percent of all occupied units in Colonias Investment Areas are manufactured homes compared with 19 percent in the remainder of the area. Research notes that such differences exist in colonias, with manufactured housing being more prevalent in certain states like California (Mukhija and Monkkonen, 2006). The Texas differences may also be reflecting that its Colonias Investment Areas contain somewhat older developments where most of the self-built housing has moved from manufactured housing to the site-built unit phase of construction. New Mexico (along with South Carolina) has the nation's highest percentage of manufactured homes in its occupied housing stock, and its Colonias Investment Areas contain a notable share of them.

Exhibit 11

Rural Border Region Percent Occupied Units Manufactured Homes



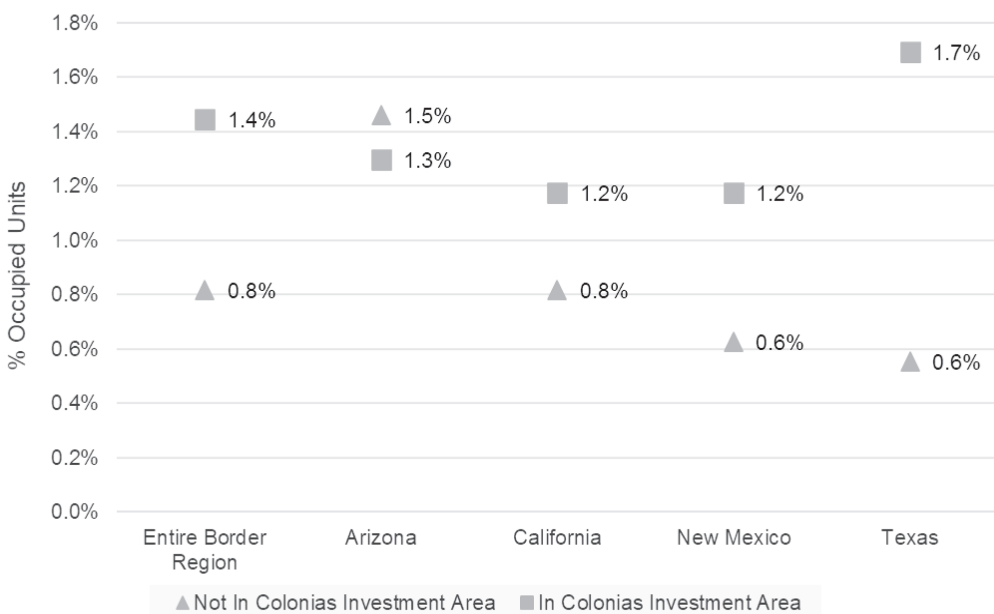
Source: 2018 American Community Survey 5-year estimates

Substandard Housing is a Visible Reminder of Colonias Needs

A defining element of colonia communities is insufficient or missing infrastructure and poor-quality housing. The percentage of units lacking complete plumbing is high for Colonias Investment Areas—1.2 percent compared with 0.4 percent for non-Colonias Investment Areas (see exhibit 10). This refers to an estimated 9,160 occupied units lacking complete plumbing. As shown in exhibit 12, these differences are relatively consistent for all four border states. The rate of homes lacking complete plumbing in Colonias Investment Areas is more than twice the national rate. Although the expansion of water and sewer treatment infrastructure in recognized colonias and new Model Subdivisions has increased access to important infrastructure, the continued poor housing quality and lack of other important infrastructure noted in previous research (Durst and Ward, 2015) means that even this elevated level of incomplete plumbing is a significant undercount of substandard housing.

Exhibit 12

Rural Border Region Occupied Units Lacking Complete Plumbing



Source: 2018 American Community Survey 5-year estimates

Mortgage Lending

The willingness of many border residents to use informal or non-conventional financing mechanisms to obtain homeownership is an indication of the gap in traditional financing available to low-income and immigrant populations. In some cases, this may be due to a dearth of financial institutions in remote rural areas. In others, institutions are present but uninterested or unwilling to lend to these populations.

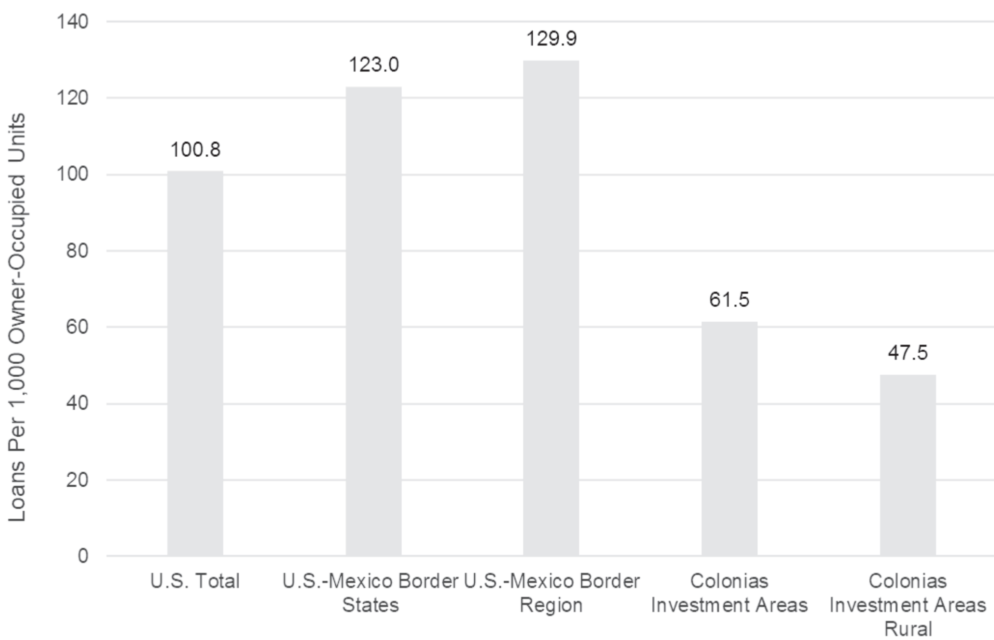
Dearth of Colonia Mortgage Lending Activity

Colonias Investment Areas have substantially lower rates of mortgage lending than nearly any other market nationally. To make lending comparisons, this analysis explores lending activity as the number of loan originations per thousand owner-occupied homes. The originations total represents the annual average number of Home Mortgage Disclosure Act (HMDA) reported loans (home purchase, refinance, and home improvement) originated for the 2015 to 2017 period. An average of 3 years of lending activity was used to minimize fluctuations and volatility that may make any single year unrepresentative of general trends.

The analysis of HMDA data finds an extremely low volume of mortgage lending in Colonias Investment Areas. The U.S.-Mexico border region at large has a relatively high volume of lending, but this includes fast growing urban and suburban areas associated with major cities, like San Diego and Phoenix. Analyses indicate the reduction in lending activity is relatively substantial in Colonias Investment Areas and is most pronounced in rural Colonias Investment Areas. As exhibit 13 shows, the amount of lending—using owner-occupied units to standardize the measure—is more than twice as large for the U.S.-Mexico border region than for Colonias Investment Areas and nearly three times as large as in rural Colonias Investment Areas.

Exhibit 13

Ratio Home Loans (Annual Average 2015–2017) to Owner-Occupied Units



Source: 2015, 2016, and 2017 Home Mortgage Disclosure Act data

A closer look at the data reveals that the limited volume of lending in Colonias Investment Areas is noticeable even when looking at just rural communities. Exhibit 14 shows the ratio of home loans to owner-occupied units for each state's rural U.S.-Mexico border region. The data are broken down by Colonias Investment Area status to show the variation in lending activity. In the entire Texas U.S.-Mexico border region, there were 35 loans per thousand owner-occupied units in rural Colonias Investment Areas, compared with 73 loans per thousand for rural areas not in Colonias Investment Areas. This difference exists for all four border region states. The findings reinforce recent research, which indicated there is limited conventional lending activity in colonias (Durst and Ward 2015). HMDA data captures the formal credit markets that colonia residents cannot access. These informal developments rely on self-financing and incremental development that can limit housing costs, but households live in substandard living conditions for long periods (Durst and Cangelosi, 2020).

Exhibit 14

Ratio Home Loans (Annual Average 2015–2017) to Owner-Occupied Units - U.S.-Mexico Border Region Rural

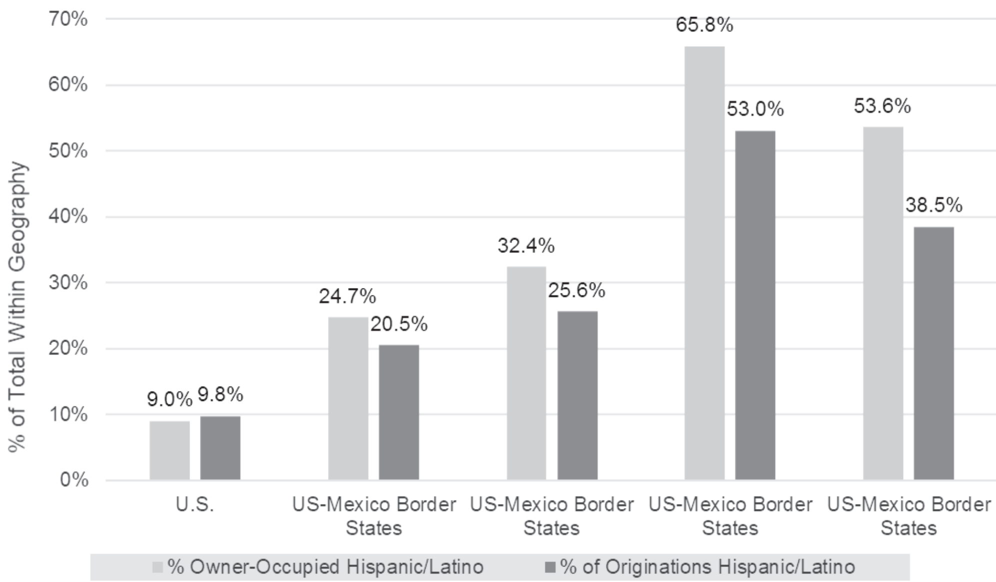
Source: 2015, 2016, and 2017 Home Mortgage Disclosure Act data

Hispanic/Latinx Lending Disproportionately Low

Hispanics/Latinxs make up a large share of the population in many colonias, particularly in Texas. As such, they are an important part of the mortgage lending market. Research indicates Hispanics/Latinxs, along with other minority groups, are generally less likely to receive home loans than white non-Hispanics (Niedt and Silver, 2014). As shown in exhibit 15, Hispanic/Latinx borrowers in Colonias Investment Areas receive a disproportionately low share of loans when compared with their share of owner-occupied units. Hispanic/Latinx households own 66 percent of the owner-occupied housing stock in Colonias Investment Areas. However, from 2015 to 2017, they received only 53 percent of home loans annually. The difference between the share of occupied housing stock and share of home loans increases incrementally from the nation to the border region at large and then again to Colonias Investment Areas.

Exhibit 15

Hispanic/Latinx Share of Owner-Occupied Housing Units and Total Home Lending (2015–2017 Annual Average)



Source: 2015, 2016, and 2017 Home Mortgage Disclosure Act data

Exhibit 16 depicts the ratio of loans to owner-occupied homes for Hispanics/Latinxs in the rural portion of the U.S.-Mexico border region. These data again show much lower Colonias Investment Areas activity. This finding supports Colonias Investment Areas as accurately identifying colonia communities. The ratios for Hispanics/Latinxs are lower than the ratios for all activity in Colonias Investment Areas as a whole and indicate that these homeowners are not receiving an appropriate share of home financing.

Exhibit 16

Ratio Hispanic/Latinx Home Loans (Annual Average 2015–2017) to Owner-Occupied Units - U.S.-Mexico Border Region Rural

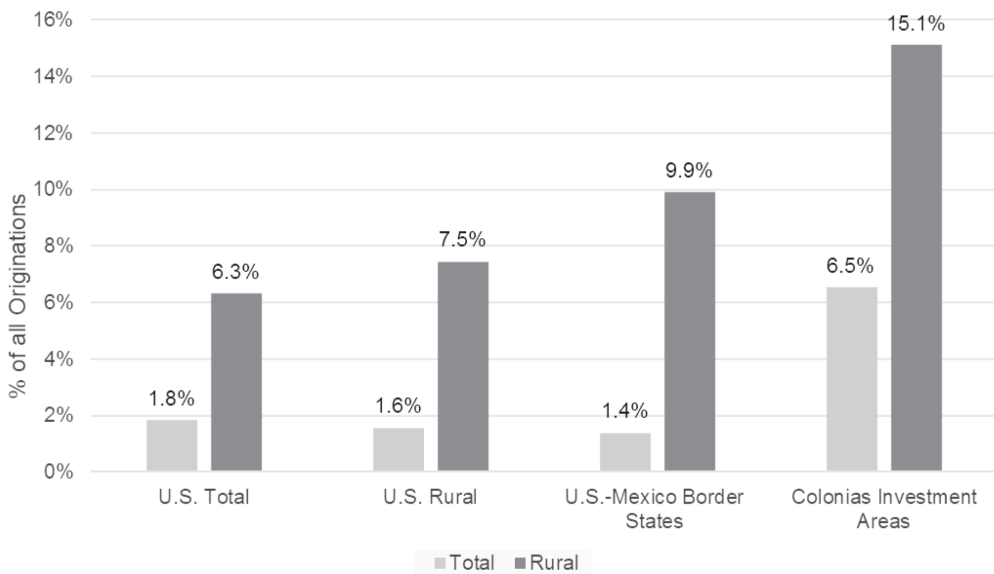
Source: 2015, 2016, and 2017 Home Mortgage Disclosure Act data

Manufactured Home Lending

Manufactured homes are an important component of housing markets in both the border region as a whole and Colonias Investment Areas. A review of HMDA data finds that loans involving manufactured homes represent a relatively large share of lending in rural areas in general and are even more prevalent in Colonias Investment Areas. As shown in exhibit 17, approximately 15 percent of all originations in rural Colonias Investment Areas involved manufactured homes, which is more than twice the percentage for rural areas in general (6.3 percent). Loans involving manufactured homes made up a larger share of lending in Colonias Investment Areas than they did for the U.S.-Mexico border region.

Exhibit 17

Share of Originated Loans Involving a Manufactured Home (2015-2017 Annual Average)



Source: 2015, 2016, and 2017 Home Mortgage Disclosure Act data

The share of mortgage loans that involved manufactured homes is a direct reflection of the prevalence of this housing in Colonias Investment Areas. Although HMDA data do not specify the age of the housing unit, in many cases residents purchase older manufactured homes due to their affordability. It is also important to note that many of these homes might be purchased without a mortgage loan and therefore not captured in HMDA data, so this is likely an undercount of manufactured home sales.

High-Cost Lending

"High-cost loans" signal mortgage loans where the interest rate charged exceeds the interest rate that would be charged on a similar loan to a highly qualified borrower. When the difference meets a certain threshold (1.5 percentage points for first lien loans), the loan is classified as high-cost.[12] High-cost lending is particularly prevalent in the manufactured housing marketplace because these homes can be purchased with personal property loans, commonly referred to as chattel loans, which carry higher interest rates than standard mortgages. High-cost loans are more common in Colonias Investment Areas than in the nation as a whole and the U.S.-Mexico border region.

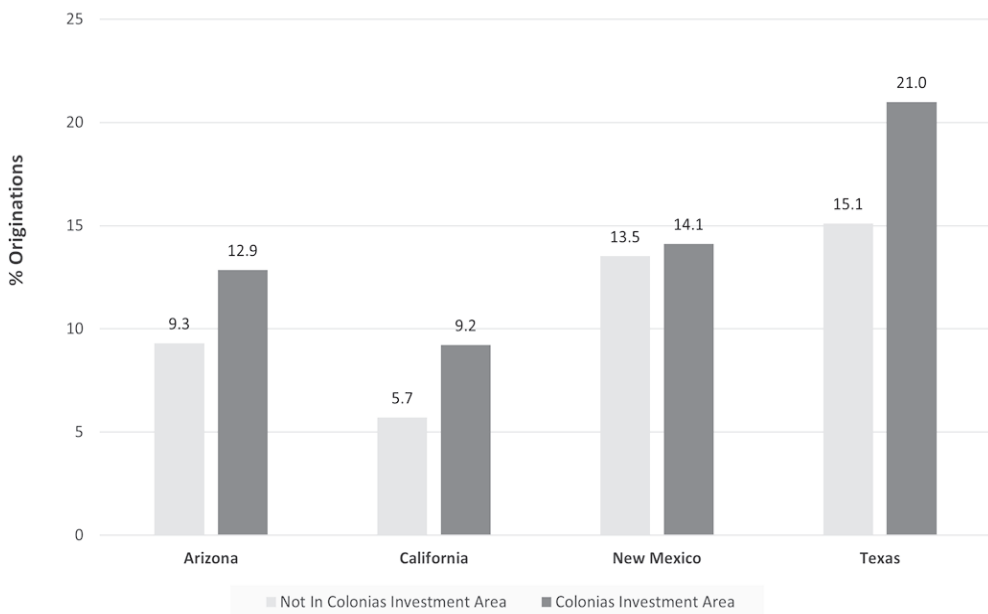
Exhibit 18 shows that for each border state, high-cost lending was more common in rural Colonias Investment Areas than in rural non-Colonias Investment Areas. Texas had the biggest differences in high-cost lending when comparing activity in and out of rural Colonias Investment Areas, but the

[12] As of October 15, 2019, the Consumer Financial Protection Bureau website provides a description on high-cost loans and the thresholds for determining when a loan becomes high-cost: https://www.consumerfinance.gov/ask-cfpb/what-is-a-higher-priced-mortgage-loan-en-1797/.

overall share of manufactured home loans was small. This again indicates that high-cost lending is not only an issue with manufactured homes. Also important is that many other households lack the capabilities to improve their housing conditions through conventional financing because many self-built units are self-financed.

Exhibit 18

High-Cost Loans (2015–2017 Annual Average) Rural U.S.-Mexico Border Region



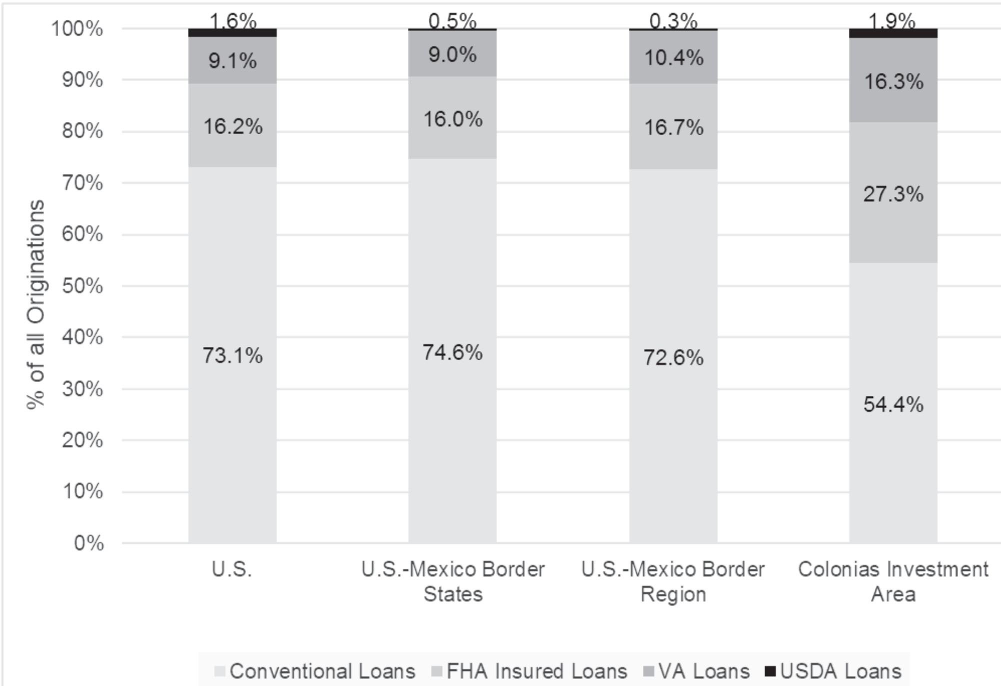
HMDA = Home Mortgage Disclosure Act.
Source: Home Mortgage Disclosure Act data 2015, 2016, and 2017

Loan Types

As shown in exhibit 19, Colonias Investment Areas receive fewer conventional loans and rely more on government-backed mortgage resources. About three-fourths of originations were conventional for the United States or for the border region, but only slightly more than 50 percent were conventional for Colonias Investment Areas. The difference was made up by higher shares of loans insured or guaranteed by the Federal Housing Administration (FHA), Department of Veterans Affairs (VA), or U.S. Department of Agriculture (USDA).

Exhibit 19

Originations 2015–2017 by Loan Type



FHA = Federal Housing Administration. VA = U.S. Department of Veterans Affairs. USDA = U.S. Department of Agriculture.
Source: 2015, 2016, and 2017 Home Mortgage Disclosure Act data

However, the larger share of government-backed lending reflects the shortage of conventional lending activity, not a higher rate of government-backed lending, particularly in rural Colonias Investment Areas. As presented in exhibit 20, the ratios of loans to owner-occupied units, by loan type, shows that the volume of conventional lending in Colonias Investment Areas is about half the volume in the U.S.-Mexico border region, whereas they have about the same level of FHA lending. A further comparison of loans to owner-occupied units for rural and non-rural Colonias Investment Areas highlights the dearth of activity in rural areas.

Exhibit 20

Ratio of Annual Average Loans to Owner-Occupied Units in Thousands, 2015–2017

Loan Type	United States	U.S.-Mexico Border Region	Colonias Investment Area	Colonias Investment Area Not Rural	Colonias Investment Area Rural
Conventional	73.7	94.3	33.5	37.3	27.7
FHA	16.3	21.7	16.8	21.0	10.4
VA	9.2	13.5	10.0	11.4	7.9
USDA	1.6	0.4	1.2	1.0	1.5
Total	100.8	129.9	61.5	70.7	47.5

FHA = Federal Housing Administration. VA = U.S. Department of Veterans Affairs. USDA = U.S. Department of Agriculture.
Source: 2015, 2016 and 2017 Home Mortgage Disclosure Act

Discussion & Policy Implications/Considerations

Review of Colonias Investment Area Findings

The border colonias region is often considered part of "Forgotten America," where struggling communities and their residents are far from the view of the mainstream economy and policy structures. But this region is home to more than 2.5 million people in communities across 250,000 square miles near the southern border. These communities and their residents need and are worthy of investment.

This research undertook a multiple-part process to identify 446 Colonias Investment Areas in the states of Texas, New Mexico, Arizona, and California. Although no geographic definition is perfect, the Colonias Investment Area concept is an advancement in the understudied realm of the border colonias region. Some specific advantages of this Colonias Investment Area typology include using census tracts as a base geography. More granular and precise than counties, tracts are also richer in content and standardization than smaller or less defined units of geography. Colonias Investment Areas represent a pragmatic middle ground between the decades-old expansive definitions that may dilute needs and resource allocation and the small, undefinable settlements without consistent or meaningful parameters.

At the same time, Colonias Investment Areas include recognized colonias and much of the surrounding areas where many of the new colonia-type developments occur. That approach may prove to be too expansive in some cases, leading to the inclusion of other communities that do not need assistance, but in other cases the opposite may be true. This study's review of housing and mortgage lending data suggests these types of problems should be limited; the findings indicate overwhelmingly that Colonias Investment Areas experience some of the most significant mortgage finance challenges and needs in the region and the nation, and are therefore appropriately targeted as indicators of an underserved market. Nevertheless, a regular review of the approach's effectiveness should be undertaken to identify such issues when they arise.

Policy Considerations

This paper's findings point to policy changes that could further improve the usefulness of the Colonias Investment Area concept for targeting efforts to increase liquidity in colonia housing finance markets, such as Fannie Mae's Duty to Serve (DTS) activities.

Revise Colonia Definition

First, an updated and standardized definition of colonia should be adopted and incorporated into the determination of Colonias Investment Areas. The Cranston-Gonzalez Act's colonia definition, which is used to target assistance from HUD's Community Development Block Grant (CDBG) program and the USDA's Rural Development programs, recognizes colonias only if they existed before the statute was enacted in November 1990. This restriction means that thousands of homes in places that meet all the other criteria of the colonias definition cannot receive assistance.

At least two other federal agencies—USDA's Rural Utilities Service and the Environmental Protection Agency—use other, slightly different definitions of colonias. Incorporated into the various federal definitions is the requirement for a state or county to designate a place as a colonia, and there are no uniform rules for doing so. Nor is any consistent type of identifying information provided by states and counties to show precise geographic locations. As a result of these variations, a census tract that might be part of a Colonias Investment Area in one state would not qualify if located in a different state.

There is considerable academic work on informal housing development that could guide efforts to update the definition (Ward and Peters, 2007). The colonias identified under a revised definition should be assessed regularly so that the information remains timely. This would ensure that new colonias are included, and older ones are redefined if warranted.

Identify Colonia-like Communities Elsewhere in the United States

Informal housing developments such as colonias are not solely a U.S.-Mexico border region phenomenon. As research has shown (Ward and Peters, 2007), they occur beyond the 150-mile border limit and in other parts of the country. An approach similar to that applied to identifying Colonias Investment Areas could be a useful way to identify these places with serious housing and infrastructure needs. That information, in turn, could be used to organize resources and focus policies.

Questions for Future Research and Policy Making

Identifying Colonias Investment Areas is only one of many steps needed to address housing and mortgage financing needs in the border region. Policy decisions will be required regarding the best ways to make mortgage lending available and accessible in an area with high poverty rates, high homeownership rates, and extreme needs. Research exists to support some of these decisions, but new analyses will be needed for others.

Coordinate Assistance

Although Colonias Investment Areas were developed for use by Fannie Mae, other entities can use them for targeting other housing improvement efforts, economic development, and more. Accessing a mortgage loan to pay for upgrading the plumbing in a home does not help the homeowner if there is no water and sewer connection available. To what degree are various activities being coordinated currently? What changes might help improve coordination?

Address Income Barriers

Income levels are a key factor in accessing mortgage financing. How are income levels distributed among Colonias Investment Area residents? What are the levels of need for standard financing, minimal assistance, intermediate aid, and deep subsidies? What steps can be taken to make the necessary aid available? What proportion of residents would qualify for what types of assistance under current law?

Provide Education

Some residents of Colonias Investment Areas may be able to afford standard or near-standard mortgage loan products. Lenders, regulators of lenders, secondary market entities, nonprofits, government agencies at all levels, employers, and others can play roles in bringing them into the formal banking market. What changes should be made by which parties to make the institutions and their products accessible? What education should be provided to residents, who should provide it, and who should pay for it?

Create Mortgage Financing Flexibility

For residents who cannot afford standard or near-standard financing, what flexibilities can the mortgage system provide related to credit histories, down-payment levels, and the like? What adjustments are needed to make mortgages available for both new homebuyers and current owners? How much flexibility should be expected or required from institutions that must meet obligations to shareholders as well as communities, customers, and statutory requirements?

Refine State and Local Laws

Texas's Model Subdivision code is an example of a state law that attempts to prevent the development of new colonias-like communities. How successful has it been? What changes might be useful?

What other changes in state and local laws could help make it easier for colonia residents to access mortgage financing? Are there ways to address difficulties in replacing contracts for deed, such as clarifying land title issues?

Are changes in the enforcement of current state and local laws needed?

Consider Non-traditional Approaches

It seems likely that non-traditional approaches can play an important role for at least some colonia residents. Small dollar "microlending" efforts could help homeowners improve or upgrade their housing without having to save first. Giusti and Estevez's 2011 case study of microlending by the nonprofit Nuestra Casa in Starr County, Texas, explores how this program made over 1,000 successful home improvement loans of $2,500 or less to colonia households from 2000 to 2011. The loan product had clear terms, offering 2-year loans at 9 percent interest, and allowed for an expanded loan if all payments were made on time for the first year. These loans were used to make important improvements such as upgrading air conditioning, enhancing flooring, and improving roofs. Due to their small dollar amounts and monthly payments, the loans were affordable, and delinquency rates were low.

Assisted self-help construction or renovation of homes has proven useful as well. The USDA's Section 523 Mutual Self-Help Housing program allocated $31 million in technical assistance for 2020[13] to nonprofit organizations. As noted by Dorsey (2021), the nonprofits then assist participant families who are required to provide a certain proportion of the labor involved in constructing or renovating their homes. Many self-help participants obtain very low interest rate USDA Section 502 direct mortgages, and others qualify for Section 502 guaranteed mortgages or others made by commercial lenders.

Several groups already operate mutual self-help programs serving parts of the U.S.-Mexico border region. For example, FUTURO Communities, Inc. operates a USDA self-help program in Uvalde County, Texas, a county that contains multiple Colonias Investment Areas (Placenia and Cargo, 2017). Some self-help programs provide additional benefits by promoting creative ways to both lower construction costs and reduce environmental impacts. These extra benefits, along with the skills that families can obtain from working on their homes, make such projects promising in both the short and long terms.

Additional support for self-help housing programs is available from a variety of sources, including the only other federal program dedicated to self-help: HUD's Self-Help Homeownership Opportunity Program (SHOP), which covers costs of developing sites where new self-help homes will be constructed. In 2020, SHOP awarded $10 million in grants[14] to intermediary lenders that make the funds available to local self-help sponsoring organizations.

Conclusion

To help inform strategies and policies that could extend greater mortgage investment to the colonias border region, this research project developed the concept of "Colonias Investment Areas." The goal of the project was to develop a comprehensive, usable, and uniform definition of colonias to help target mortgage and finance resources and more efficiently direct assistance to these often overlooked, long-struggling communities. A clearly delineated definition of colonias communities

[13] The following USDA Rural Development (RD) document lists USDA allocations by program including self-help housing technical assistance funds: https://www.rd.usda.gov/sites/default/files/USDARDAppTableFY21.pdf.

[14] The following HUD url lists 2020 Shop Grantees: https://www.hudexchange.info/programs/shop/.

can help policy efforts to bring resources to the colonia. Although there are many challenges to improving mortgage finance in the colonia region, possibilities exist, ranging from improving education to promoting self-help programs.

As the nation begins to recover from the COVID-19 pandemic, it will be more important than ever to ensure resources get to those who most need them. The U.S.-Mexico border region was among the hardest hit in terms of infections (Fernandez, Smith, and Dobbins, 2020; Sieff, 2020). An improvement in home financing that helps reduce substandard housing can help lead the region back from these challenging times.

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Authors

Keith Wiley is a research analyst at the Housing Assistance Council. Lance George is the director of the Research and Information Division at the Housing Assistance Council. Sam Lipshutz, formerly a Product Manager at Fannie Mae during the development of this article, is currently a Policy and Impact Manager at Amazon.

References

Donelson, Angela, and Esperanza Holguin. 2001. *Homestead Subdivision/Colonias and Land Market Dynamics in Arizona and New Mexico*. Memoria of a Research Workshop: "Irregular Settlement and Self-Help Housing in the United States." Cambridge, Mass. Lincoln Institute of Land Policy. 39–41.

Dorsey, Bryan. 2021. "Refocusing on Sustainability: Promoting Straw Bale Buildings for Government-Assisted, Self Help Housing Programs in Utah and Abroad," *Sustainability* 13 (5): 2545.

Durst, Noah J., 2016. "The Nature and Extent of Self-Help Housing in Texas: From Colonias to Model Subdivisions," *Journal of Planning Education* 36 (2): 145–157.

Durst, Noah J. and Elena J. Cangelosi. 2020. "Self-Help Housing and DIY Home Improvements: Evidence from the American Housing Survey." *Housing Studies*. DOI: 10.1080/02673037.2020.1759514.

Durst, Noah J., and Esther Sullivan. 2019. "The Contribution of Manufactured Housing to Affordable Housing in the United States: Assessing Variation Among Manufactured Housing Tenures and Community Types," *Housing Policy Debate* 29 (6): 880–898.

Durst, Noah J., and Peter Ward. 2015. "Colonia Housing Conditions in Model Subdivisions: A Déjà Vu for Policy Makers," *Housing Policy Debate* 26 (2): 316–333.

———. 2015. "Las Colonias in the 21st Century: Progress Along the Texas-Mexico Border." https://www.dallasfed.org/~/media/documents/cd/pubs/lascolonias.pdf.

Federal Reserve Bank of Dallas. 1996. "Texas Colonias: A Thumbnail Sketch of the Conditions, Issues, Challenges and Opportunities." https://www.dallasfed.org/~/media/documents/cd/pubs/colonias.pdf

Fernandez, Manny, Mitch Smith, and James Dobbins. 2020. "South Texas Communities Have the Country's Highest New Infection Rates," *New York Times*, August 3.

Giusti, Cecilia, and Luis Estevez. 2011. "Microlending For Housing in the United States. A Case Study in Colonias in Texas," *Habitat International* 35 (2): 307–315.

Mukhija, Vinit, and Paavo Monkkonen. 2006. "Federal Colonias Policy in California: Too Broad and Too Narrow," *Housing Policy Debate* 17 (4): 755–780.

Niedt, Christopher, and Marc Silver. 2014. *An Uneven Road to Recovery: Place, Race and Mortgage Lending on Long Island*. Hempstead, NY: Hofstra University, National Center for Suburban Studies. https://www.hofstra.edu/pdf/academics/css/ncss-report-uneven-road.pdf.

Norman, Laura M., Angela J. Donelson, Edwin L. Pfiefer, Alven H. Lam, and Kenneth J. Osborn. 2004. *Monitoring Colonias Development along the United States-Mexico Border: A Process Application using GIS and Remote Sensing in Douglas, Arizona, and Agua Prieta, Sonora*, United State Geological Survey Open File Report 2004-1212. https://pubs.er.usgs.gov/publication/ofr20041212.

Núñez-Mchiri, Guillermina. 2009. "The Political Ecology of the Colonias on the U.S.-Mexico Border: Human-Environmental Challenges and Community Responses in Southern New Mexico," *Southern Rural Sociology* 24 (1): 70.

Olmedo, Carlos, and Peter Ward. 2016. "Model Subdivisions: The New Face of Developer Lot Sales for Low-Income Colonia-Type Housing in Texas," *Land Use Policy* 52: 181–194.

Parcher, Jean, and Delbert Humberson. 2007. *CHIPS: A New Way to Monitor Colonias Along the United States-Mexico Border.* U.S. Geological Survey Open File Report 2007–1230. http://pubs.usgs.gov/of/2007/1230/pdf/OFR2007-1230.pdf.

Placencia, Ana, and Gayle Cargo. 2017. "USDA Self-Help Housing Puts Families in Homes in South Texas," *USDA blog*, March 7. https://www.usda.gov/media/blog/2010/07/01/usda-self-help-housing-puts-families-homes-south-texas.

Sieff, Kevin. 2020. "Coronavirus On the Border," *The Washington Post*, May 27.

Smith, Wesley R. 1993. *The NAFTA Debate Part 1: A Primer on Labor, Environmental, and Legal Issues*. Washington, D.C.: The Heritage Foundation. http://thf_media.s3.amazonaws.com/1993/pdf/bg936.pdf.

U.S. Department of Agriculture and the Environmental Protection Agency (USDA/EPA). 2014. *U.S. Mexico Border Needs Assessment and Support Project: Phase 1 Scoping Assessment Report*. USDA/EPA Report. https://www.rd.usda.gov/files/RD_RUS_Phase1ResearchRpt.pdf.

Ward, Peter M., and Paul A. Peters. 2007. "Self-Help Housing and Informal Homesteading in Peri-Urban America; Settlement Identification Using Digital Imagery and GIS," *Habitat International* 31 (2007): 205–218.