



Rural Mortgage Lending Over the Last Decade

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Executive Summary

The purpose of this research is to contribute to a greater understanding of rural housing and mortgage markets. This analysis focuses on single-family conventional mortgage lending in urban and rural areas since 2004. We make use of the Federal Housing Finance Agency 2015 Proposed Duty to Serve (DTS) rule rural definition.¹ We initially present a summary of the economic and demographic environment across this urban/rural divide. Second, we use data reported under the Home Mortgage Disclosure Act (HMDA) to obtain an estimate of single-family owner-occupied conventional originations in the rural market. Differences in borrower, loan, and mortgaged property characteristics across areas are contrasted using a richer set of attributes available in Fannie Mae loan data. In closing, we examine how some of these differences have evolved over the last decade.

ECONOMIC AND DEMOGRAPHIC ENVIRONMENT

- Rural share of the population is decreasing and aging at a faster rate
- Rural incomes are lower, the poverty rate is higher, and incomes were less affected by the Great Recession
- Rural employment rate and establishments per capita have been falling, but rural wages have been growing relative to urban wages; however rural employment is more concentrated in fewer industry groups making it more susceptible to industry-specific shocks to employment
- Rural home prices rose more from 2004 to 2008 and had a less severe drop post-2008

RURAL CONVENTIONAL MORTGAGE MARKET SIZING

- In 2014, rural mortgage loans account for 20% of conventional mortgage loans, 14% of loan amount
- Rural mortgage markets had a less pronounced downturn during Housing Crisis
- Rural markets are unevenly distributed and more concentrated in less populous states

DIFFERENCES BETWEEN URBAN AND RURAL MORTGAGE LENDING

- Rural borrowers have lower incomes, are more likely to be self-employed workers, less likely to be first-time buyers
- Rural mortgaged properties are more likely to have a low appraisal, to be manufactured housing or second homes, and have larger lot sizes
- Rural loans are for smaller amounts, less likely to be adjustable rate mortgages, more likely to be fixed rate mortgages with shorter than 30-year terms, and have marginally higher mortgage note rates and spreads than urban

DIFFERENCES ACROSS RURAL AREAS

- States where rural loans account for a greater percentage of total state originations have younger, better credit score rural borrowers, and more manufactured housing rural loans
- States with high rural share and large share of the overall national volume of rural loans have lower incomes, loan amounts and back-end debt-to-income (DTI) ratios
- Rural manufactured housing loans are concentrated in the South and Southwest and owner-occupied homes' share in rural areas is highest in the Midwest

TRENDS IN RURAL LENDING DIFFERENCES SINCE 2004

- Post-Housing Crisis: rural first-time buyer share fell, second home buyer share increased as rural borrower incomes fell and back-end DTI increased relative to urban
- Rural borrower age increased relative to urban over the last decade while borrower age differences across rural markets widened
- Other differences across rural areas were most pronounced in lead up to the Housing Crisis

¹ For more details see: <https://www.fhfa.gov/DataTools/Downloads/Pages/Rural-Areas-Data.aspx> and *Enterprise Duty to Serve Underserved Markets; Notice of proposed rulemaking; request for comments*, 80 Fed. Reg. 79, 182 (Dec. 18, 2015)



1. Introduction

The purpose of this research is to contribute to our understanding of the differences between single-family housing markets in urban and rural areas. Our focus is on potential differences in single-family mortgage lending between urban and rural, and also across rural areas since 2004. We initially present a summary of the economic and demographic environment across this urban/rural divide. Second, we use Home Mortgage Disclosure Act (HMDA) data to obtain an estimate of single-family owner-occupied conventional originations in the rural market. Differences in borrower, loan, and mortgaged property characteristics across areas are contrasted using a richer data set of loan information on Fannie Mae acquisitions. A discussion of how some of these differences have evolved over the last decade is also presented. Other factors that contribute towards differences in housing across the urban/rural divide, but are not the focus of this research, include differences in: rental markets, the housing stock, and multifamily lending.

Throughout this report, census tracts are classified as urban or rural based on the Federal Housing Finance Agency 2015 Proposed Duty to Serve (DTS) rule definition.² This is a fairly broad definition of rural areas, in that it can classify suburban and exurban zones as rural. Table A.1 shows how the DTS definition of rural overlaps with the U.S. Department of Agriculture's Economic Research Service (USDA ERS) Rural-Urban Commuting Areas (RUCA) codes. One can observe that certain segments inside Urban Areas and Urban Clusters are actually classified as rural under this DTS definition. One such case is for RUCA code 4 "Micropolitan Area Core," for which 76.8% of the population and 81.2% of the land area with this classification is considered rural under the DTS definition.

2. Contrasting the Urban and Rural Economic and Demographic Environments

In order to understand the differences in mortgage lending across the urban/rural divide it is important to have a firm grasp of the extent to which economic and demographic environments across these two geographic groups differ. This section of the report presents indicators that shed some light on this issue. Figures 2.1 to 2.4 present statistics for urban and rural counties. The determination of whether a county is urban or rural is based on whether the sum of the year 2010 population living in rural census tracts within a county accounts for 50% or more of the total year 2010 population for the county.

Rural share of population decreasing, aging at a faster rate. Figure 2.1 shows how the median age in both urban and rural areas has evolved since 2000 (note that the dashed-and-dotted section of the trend lines indicates there is no data available between 2000 and 2009). While for both areas there has been a gradual aging of the population, as evident by the upward trends in median age, the population in rural areas has been aging at a greater pace. A similar pattern of an aging rural population relative to the urban one would emerge if one were to look at other indicators, such as the share of the population above age 65 or below age 20. Figure 2.1 also displays the total population for urban and rural counties.³ This allows us to observe that, even though population has been growing for both types of counties, the rural population growth rate has lagged behind that of the urban population, hence the rural population share has fallen from 24.8% in 2000 to 23.0% by 2010-2014. This shows an extension, during this period, of the long-term trend of a diminishing share of the US population residing in rural areas.⁴

² Rural tracts are defined as those "outside of a metropolitan statistical area (MSA), as designated by the Office of Management and Budget" or those "outside of an (MSA)'s Urbanized Areas and Urban Clusters, as designated by the U.S. Department of Agriculture's Rural-Urban Commuting Area codes". For more details see:

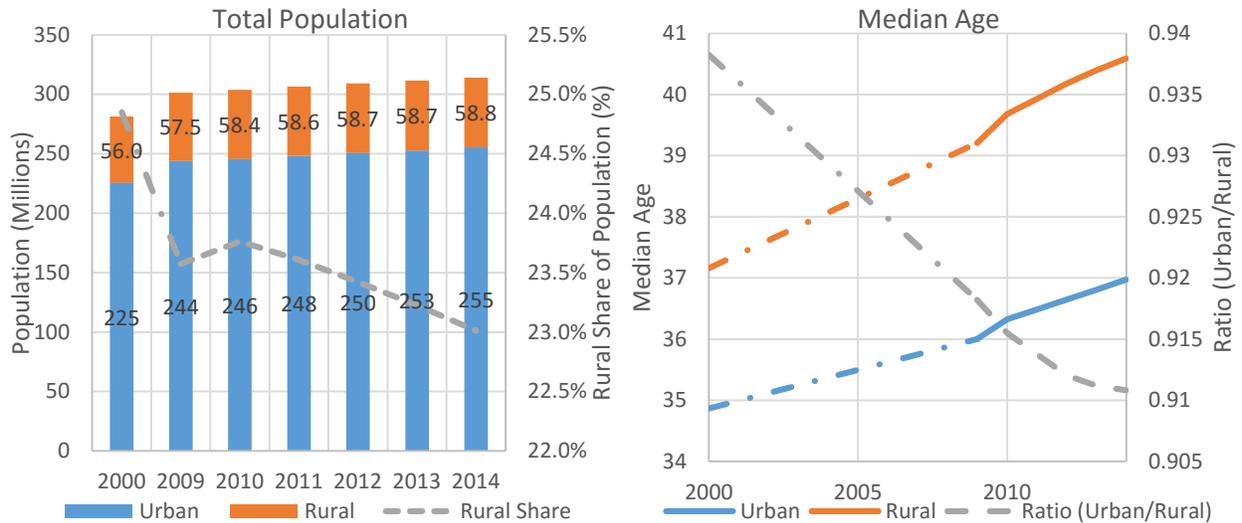
<https://www.fhfa.gov/DataTools/Downloads/Pages/Rural-Areas-Data.aspx> and *Enterprise Duty to Serve Underserved Markets; Notice of proposed rulemaking; request for comments*, 80 Fed. Reg. 79, 182 (Dec. 18, 2015)

³ Note that the rural population estimate in Figure 2.1 is based on county-level information while the population estimate in Appendix Table A.1 is based on census tract-level information. Hence the slightly smaller estimate of the rural population share for 2010 in Figure 2.1 relative to Appendix Table A.1.

⁴ Appendix Table A.2 shows US Census Bureau estimates for the US rural population share from 1900 to 2010. Note that the Census Bureau uses a different rural definition, namely: areas are rural if outside an urban area or urban cluster.



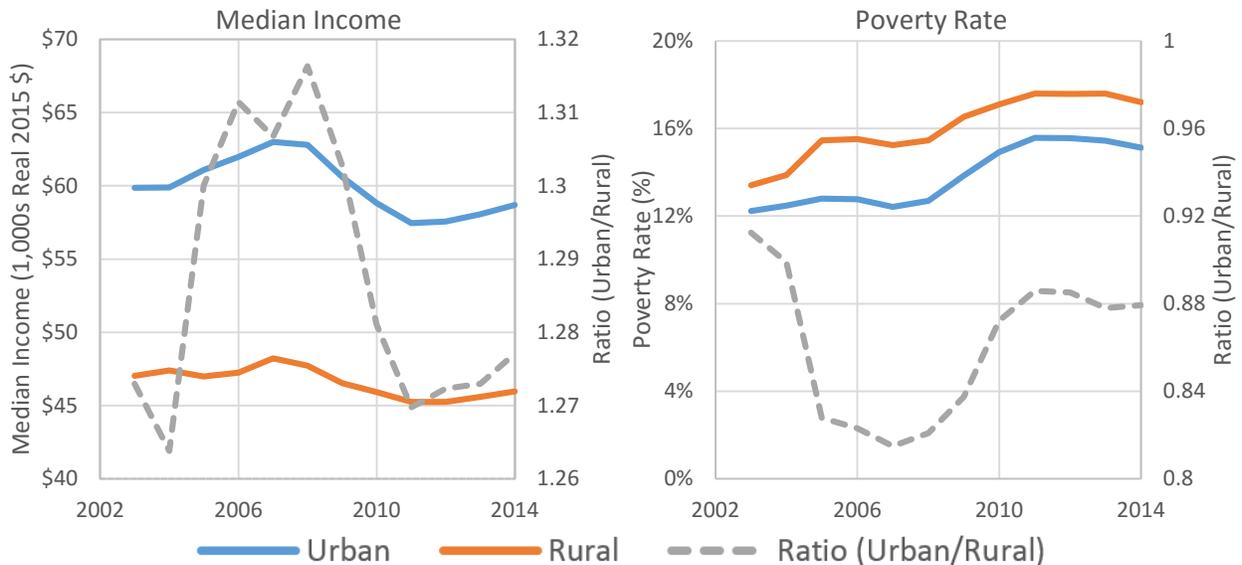
Figure 2.1 Total Population and Median Age for Urban and Rural Counties (2000, 2009-2014)



Source: Author computations based on U.S. Census Bureau, 2000 Decennial Census and 2009-2014 American Community Survey (ACS) 5-year estimates.

Rural incomes lower, poverty higher, less affected by the Great Recession. As can be seen in Figure 2.2 rural counties have lower median incomes and a higher poverty rate (share of population below the official poverty threshold).⁵ In addition, these figures show that the disparity between urban and rural areas was most pronounced in the build up to the Great Recession. During this 2004 to 2007/08 period, urban median incomes were growing at a faster pace and the urban poverty rate was increasing as a lower rate, hence the disparity between urban and rural areas across these two attributes peaked around 2007/08. The impact of the Great Recession on incomes has been less pronounced in rural areas, thus contributing to a narrowing of the differences in income and poverty across the urban/rural divide.

Figure 2.2 Income and Poverty for Urban and Rural Counties (2003-14)



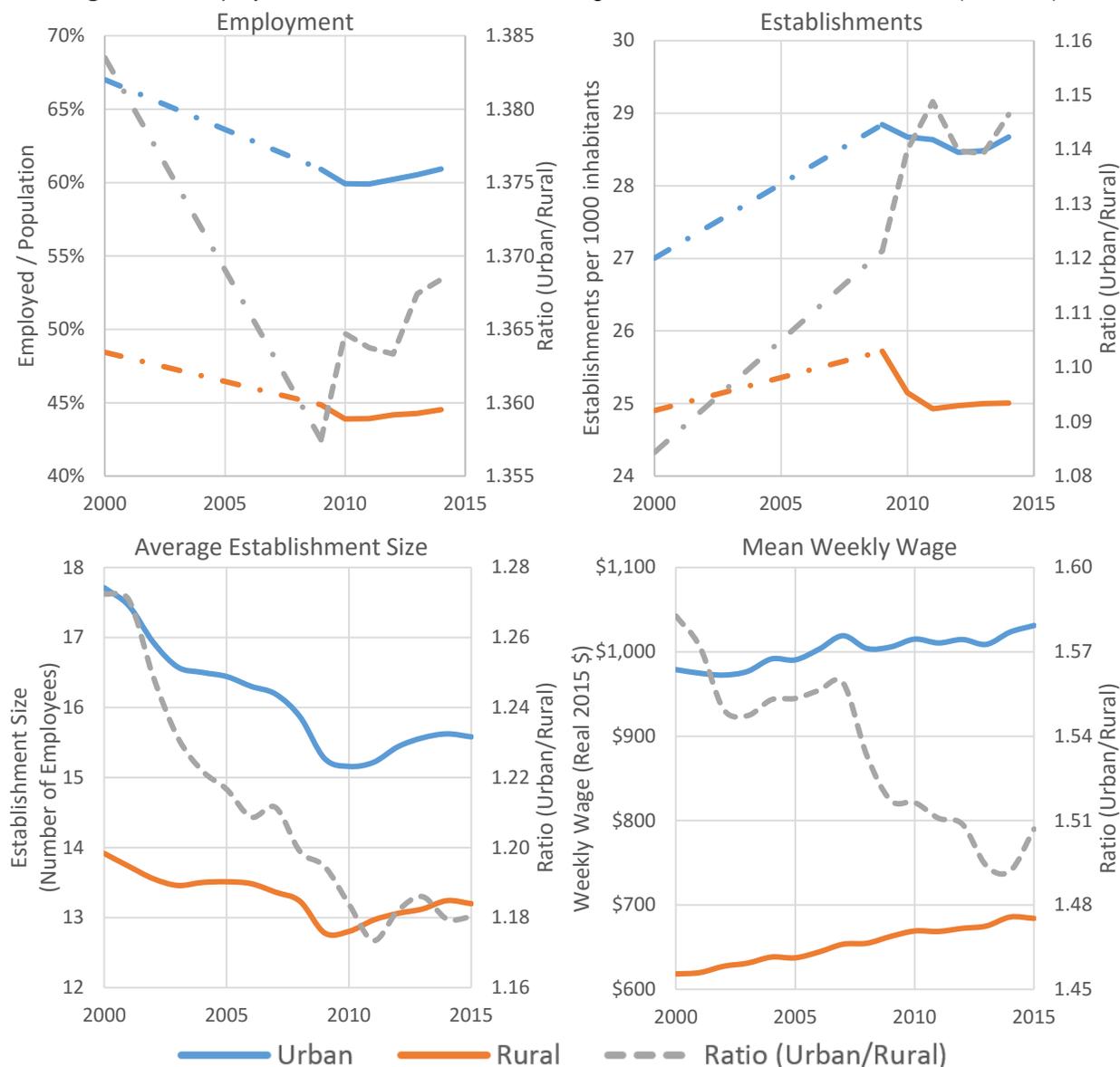
Source: Author computations based on U.S. Census Bureau, 2003-2014 Small Area Income and Poverty Estimates (SAIPE).

⁵ Household net worth (assets – debt) also tends to be lower in rural areas, a recent estimate shows an urban net worth premium of between 25% and 30% (J. Thompson and G. Suarez, 2015, “Exploring the Racial Wealth Gap Using the Survey of Consumer Finances,” Finance and Economics Discussion Series 2015-076, Washington, Board of Governors of the Federal Reserve System).



Rural employment rate and establishments per capita falling but wages growing relative to urban. The charts in Figure 2.3 present information on employment, establishments and wages for urban and rural counties. Note that one firm can have multiple establishments or places of business. The top left panel shows that the employment rate for both types of counties dropped significantly between 2000 and 2009 (note that a population estimate is unavailable between 2001 and 2008, hence no employment rate estimates) but have improved since then, with the urban rebound being more pronounced. The number of establishments per capita in rural areas in 2000 and 2014 is very similar (24.9 and 25.0 per 1000 people, respectively), on the other hand, in urban areas we have seen an increase in establishments per capita during this period. While these facts paint a discouraging picture for rural areas, on a positive note, for workers able to find a job, average rural worker wages have been growing relative to those of urban workers. Figure 2.3 also shows that the average disparity in establishment size across these two categories of counties has been decreasing since 2000.

Figure 2.3 Employment, Establishments, and Wages for Urban and Rural Counties (2000-15)

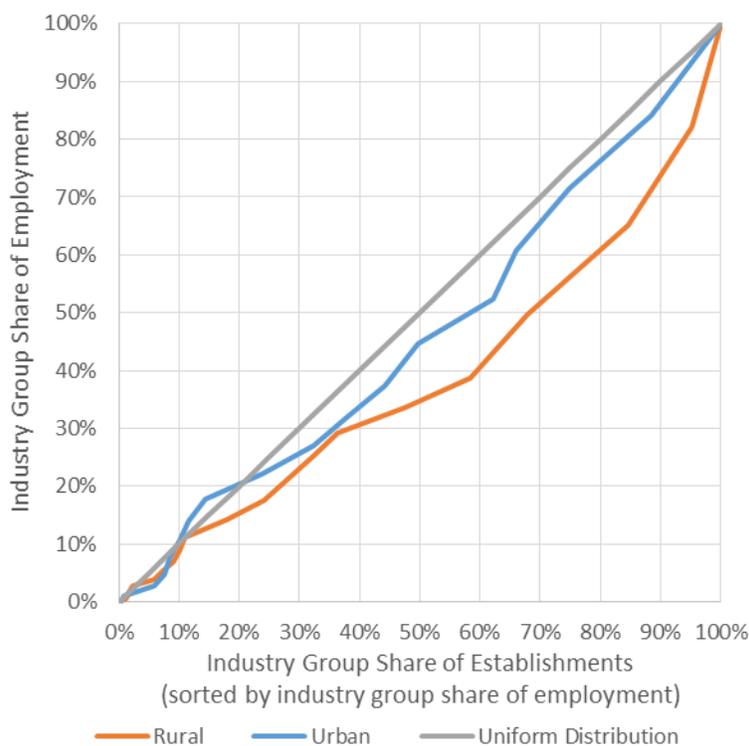


Source: Author computations, Bureau of Labor Statistics, 2000-15 Quarterly Census of Employment and Wages (QCEW). Population for employment rate and establishments per 1000 capita from 2000 Census and 2009-14 ACS 5-year estimates.



Rural employment more concentrated in large industries. Figure 2.4 displays a Lorenz curve for the concentration of employment by 2-digit North American Industry Classification System (NAICS) codes. The 45 degree line represents a uniform distribution of employment by industry, with curves further away from this uniform line indicating greater concentration. One can observe that rural counties have employment that is more concentrated in larger industries. The table at the bottom of Figure 2.4 also displays the overall Gini coefficients for industry concentration over the last decade. Rural county Gini coefficients are consistently higher than the urban ones, indicating greater employment concentration by industry. It is also interesting to note that the trends in industry concentration, as measured by the Gini coefficient, are similar across the urban/rural divide; namely: both areas have experienced a growing de-concentration of employment by industry groups since 2000, with a slight reversion of the trend occurring in 2010. Appendix Table A.3 provides greater detail on the largest industries for urban and rural counties in 2000 and 2014. This table shows that manufacturing was overtaken by health care and social assistance as the largest industry group in terms of total employment in urban counties but not so in rural counties. Furthermore, we observe that even though the share of workers employed in the five largest industries has decreased during this period for both county types, the rural share is still significantly larger. This reconfirms how rural employment remains significantly more concentrated in certain industry groups, thus making it more susceptible to industry-specific employment shocks.

Figure 2.4 NAICS 2-Digit Industry Concentration for Urban and Rural Counties (2014)



Industry Concentration Gini Coefficient based on 2-Digit NAICS Groups

Year	2000	2005	2010	2014
Urban Counties	0.104	0.074	0.073	0.074
Rural Counties	0.247	0.224	0.213	0.229

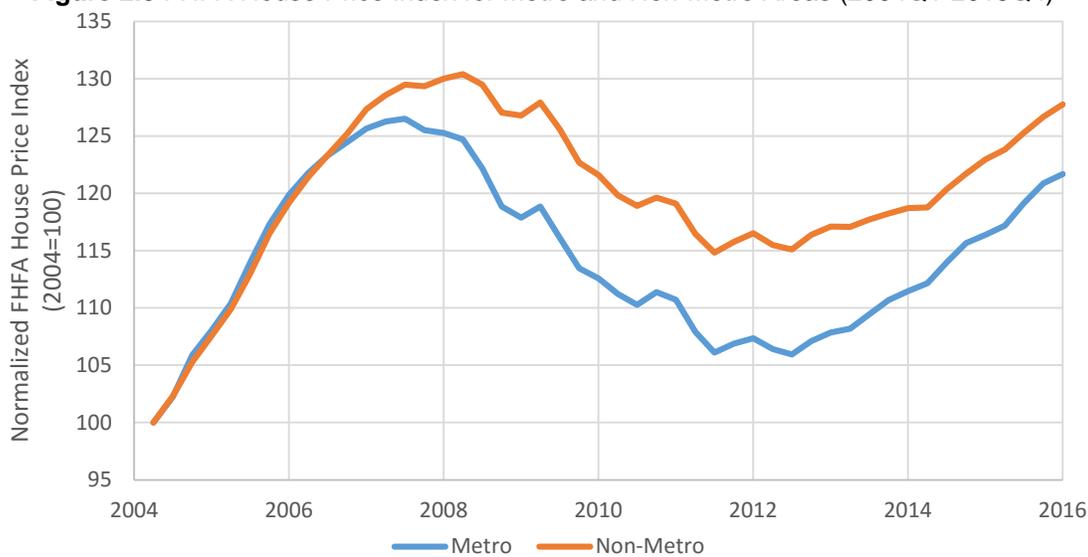
Source: Author computations based on U.S. Census Bureau, 2000,05,10,14 County Business Patterns (CBP).

Rural home prices rose more, had less severe downturn during 2000s. Figure 2.5 displays a normalized Federal Housing Finance Agency (FHFA) house price index (HPI) average for metro and non-metro areas, where the index is set at 100 for the first quarter of 2004. It is important to note that this metro/non-metro classification differs from the rural



definition used in other sections of the report due to data constraints.⁶ Nonetheless, proxying for rural with the non-metro category one can conclude that, on average, rural areas navigated the lead up and denouement of the Housing Crisis in a more serene fashion. Even though rural areas saw a greater increase in the house price index, this was not complemented by a greater dip post-2008, leading to a relatively higher price level relative to their 2004 level for rural versus urban areas. It is important to note at this point that house prices in rural areas are still lower on average than in urban areas.

Figure 2.5 FHFA House Price Index for Metro and Non-Metro Areas (2004Q1-2015Q4)



Source: Federal Housing Finance Agency (FHFA), House Price Index (HPI).

3. Rural Mortgage Market Sizing

Having described certain elements of the economic and demographic environment in rural areas, this section of the report presents an estimate of the size of the single-family rural mortgage lending market. To do so we make use of HMDA data for the years 2004 to 2014. The market is sized in two ways: total number of loans originated (Figure 3.1); and total loan amount originated (Appendix Figure A.5). In order to identify whether a loan was originated in a rural area, we again make use of the FHFA DTS definition of rural Census tracts and map this onto the HMDA data, which contains census tract as a geographic identifier.⁷ Furthermore, for sizing the market, HMDA data is restricted to first-lien, conventional (conforming and jumbo), originations (purchase money mortgage (PMM) and refinance) for owner-occupied single-family and manufactured housing.

Rural loans account for 20% of loans, 14% of loan amount, had less severe downturn. Figure 3.1 shows that, as of 2014, the latest year for which HMDA data is available, rural loans accounted for approximately 20% of total mortgage loan originations by count. In terms of loan amount, Appendix Figure A.5, shows the rural share of originations by unpaid principal balance (UPB) was around 14%, reflecting the smaller average loan size in rural areas. Rural shares of purchase money loans and loan amount are slightly higher at 23% and 15% in 2014, indicative of purchase money loans accounting for a greater share of rural loans relative to their share of urban loans. Both figures also show that the rural share of the market peaked in 2008 when originations hit their lowest point. This indicates that rural areas suffered a less pronounced downturn during the Housing Crisis. On the other hand, rural share has gradually decreased since 2008 highlighting how mortgage originations have grown at a faster pace in urban areas.

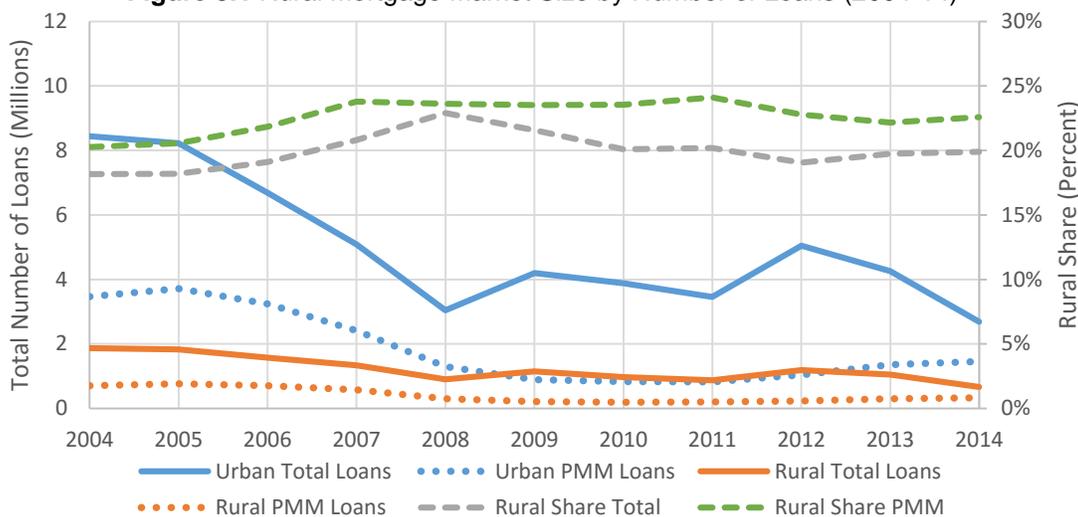
⁶ FHFA HPI available for metropolitan areas and for state non-metro areas. For more details see:

<http://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx>

⁷ FHFA's DTS rural tracts definition is based on 2010 Census tract coding. HMDA data for 2004 to 2011 uses 2000 Census tract coding. These are matched to 2010 Census tracts using a population weighting scheme.



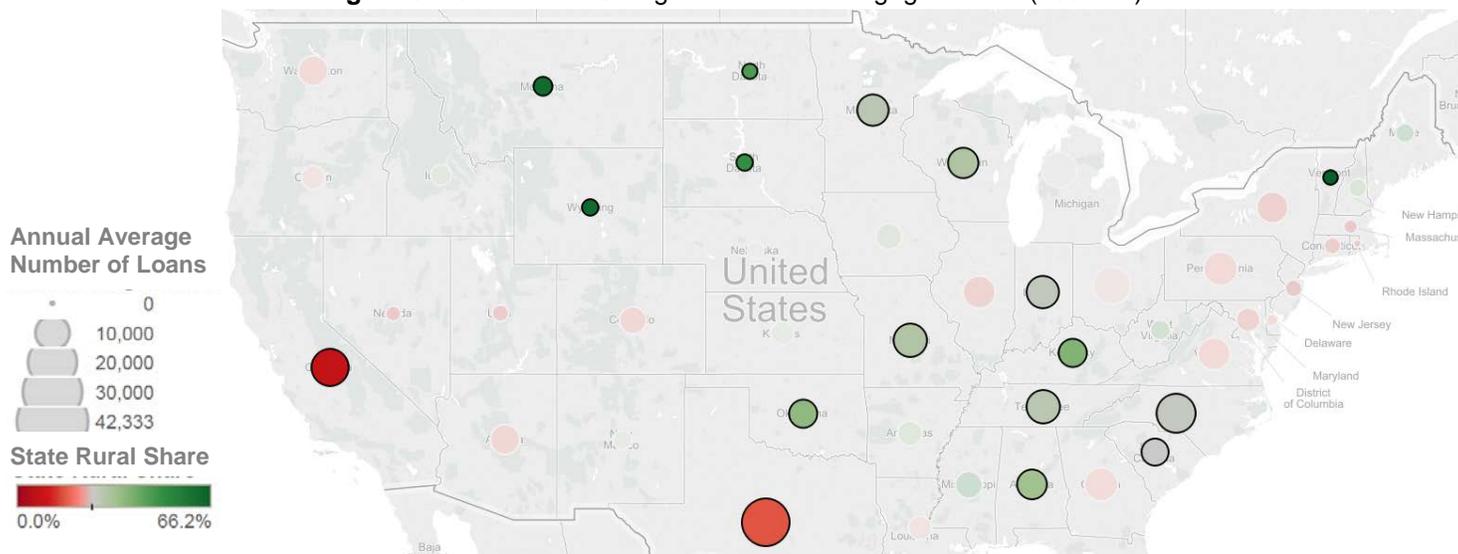
Figure 3.1 Rural Mortgage Market Size by Number of Loans (2004-14)



Statistics based on HMDA conventional, first-lien originations for owner-occupied single-family and manufactured housing, 2004-14.

Rural markets unevenly distributed and more concentrated in less populous states. Figure 3.2 displays the state average annual number of rural loans and the share of loans in a state that are originated in rural areas. The first thing to note is that states where rural loans are most concentrated (states with the highest rural share of overall mortgage lending activity) tend to be less populous. As such, the total number of rural loans originated in these states is actually fairly small. Among the states with the five highest rural shares (MT, ND, SD, VT, WY), Montana has the highest average number of rural PMM originations, at 5,768. By contrast, the largest numbers of rural loans are originated in the most populous states, where the rural market accounts for a smaller share of overall mortgage lending (CA, TX). Figure 3.2 also highlights states with strong rural markets, with each of these states having both above median rural shares (above 25.7%) and accounting for over 2% of the total rural loans (over 11,000 rural loans annually).

Figure 3.2 State-Level Sizing of the Rural Mortgage Market (2004-14)



	States with Highest Rural Share of State Loans					States with Most Rural Loans	
State	MT	ND	SD	VT	WY	CA	TX
State Rural Share of Loans	62.4%	45.7%	49.7%	66.2%	63.2%	7.4%	15.8%
Annual Average Rural Loans	5,768	3,481	4,335	3,097	4,156	25,133	42,333

Statistics based on HMDA purchase money mortgage first-lien originations for owner-occupied single-family and manufactured housing, 2004-14.



Rural loan censoring in HMDA may be significant, but less of an issue in total market sizing. One concern with sizing the rural market using HMDA data relates to under reporting of mortgage lending activity due to HMDA limitations. Specifically, lenders that operate exclusively outside of metropolitan areas or lenders below a certain asset threshold are not required to report their activity to HMDA. This censoring may be significant. Indeed, according to the Housing Assistance Council, as many as 17.5% of non-metro Federal Deposit Insurance Corporation (FDIC) insured institutions were below the HMDA reporting threshold in 2009, compared to 7.7% of metro institutions.⁸ This share of banking institutions that are not required to report under HMDA is likely to be decreasing due to the ongoing consolidation of the banking industry, whereby a number of smaller banking institutions that are being replaced by, or absorbed into, bigger banks. However, by comparing the overall size of the rural market as reported under HMDA to its share of Fannie Mae acquisitions, one can see these two numbers are very similar. This might indicate that, given the smaller size of these non-reporting lenders, the impact on the total sizing of the conventional rural market is minimal. Although alternatively it may indicate that these same lenders that do not report under HMDA also tend to not deliver their loans to Fannie Mae. On the other hand, Appendix Figure A.6 displays the average annual rural loans and rural share at the county level and one can observe there are a significant number of counties in rural areas with a very small number of rural loans reported (namely along the North-South segment of the US stretching from ND to TX). This may indeed be indicative of significant under-reporting in certain smaller rural markets that would make an analysis of these areas using HMDA data unreliable.

4. Differences between Urban and Rural Mortgage Lending

In order to highlight key differences between urban and rural mortgage lending, this portion of the report makes use of a richer dataset in terms of loan information, namely, data on Fannie Mae acquisitions of first-lien purchase money and refinance loans for owner-occupied homes from 2004 to 2015. Figures 4.1 to 4.4 report average differences between urban and rural attributes of borrowers, mortgaged properties, and loans. Reported differences are the value of the rural indicator coefficient estimates divided by the urban mean value for an attribute from regressions of state monthly average attributes of urban and rural loans.⁹ These regressions control for acquisition year, refi status, and state of origination, using the following specification:

$$Attribute_{mo, re, st, yr} = \alpha + \beta * Rural + \lambda_{re} + \lambda_{st} + \lambda_{yr} + \varepsilon_{mo, st, re, yr}$$

In the equation above: *mo* denotes month; *re* denotes refinance (λ_{re} is a refinance indicator); *st* denotes origination state (λ_{st} are state fixed effects); *yr* denotes acquisition year (λ_{yr} are year fixed effects). Analyzing differences between urban and rural loans in this manner provides a more accurate view of the differences between these two categories because we are able to control for these other factors that may bias the differences in a simple comparison of means. For example, because the purchase share of rural area loans is higher than the urban share, and purchase loans will tend to have a higher loan-to-value (LTV) ratio than refinance loans, the rural indicator coefficient will have an upward biased value for LTV due to the greater purchase share for rural loans.

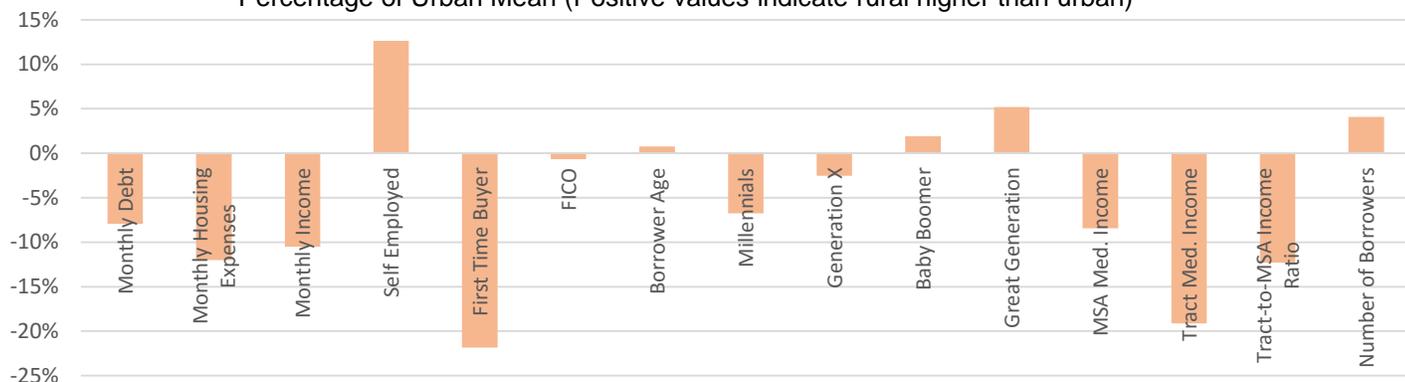
Rural borrowers have lower incomes, are more likely to be self-employed workers, less likely to be first-time buyers. Figure 4.1 displays differences in borrower attributes between urban and rural areas. The most salient differences pertain to income, and both self-employment and first-time buyer statuses. Rural borrowers are more likely to be self-employed workers, reflecting the greater preponderance of industries with a high share of self-employed workers (e.g. agriculture or construction). As seen earlier in the report, incomes are lower in rural areas and hence borrower and area incomes in these areas reflect this. The difference in the probability of being first-time buyers reflects some of the age differences across the two population groups. Given the rural population is older, all else equal, there are fewer first-time home buyers. In addition, although the difference in borrower age is small (less than 1%) the shares of borrowers belonging to each generation show a clear difference in the age profile of urban and rural borrowers, again mirroring differences in these population groups as a whole.

⁸ Housing Assistance Council (HAC), Rural Housing Research Note, “Improving HMDA: A Need to Better Understand Rural Mortgage Markets”, October, 2010. www.ruralhome.org/storage/documents/notehmdasm.pdf

⁹ For example, in Figure 4.1, Monthly Debt has a reported difference of -7.9% of urban mean. This is obtained by dividing the rural coefficient estimate of \$-205.45 by the urban mean monthly debt value of \$2,587.28.



Figure 4.1 Differences in Borrower Attributes between Urban and Rural Areas as a Percentage of Urban Mean (Positive values indicate rural higher than urban)

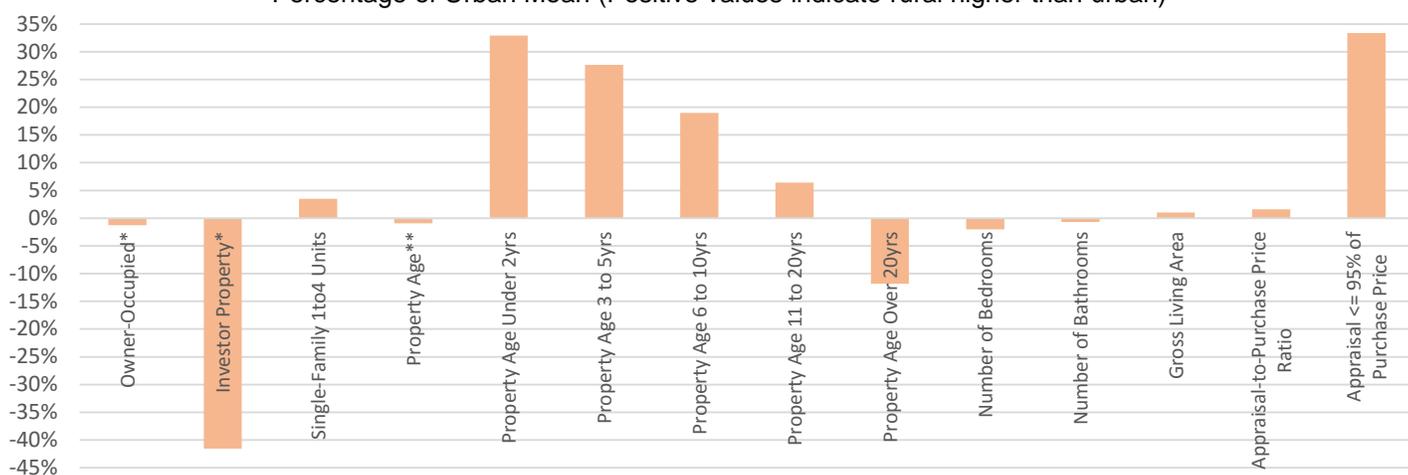


Rural Mean	\$2,368	\$1,468	\$7,410	0.36%	8.0%	731	47.5yrs	5.4%	34.7%	41.7%	9.4%	\$51,677	\$55,194	1.05	1.6
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Statistics based on Fannie Mae acquisitions of purchase money and refinance loans for owner-occupied homes, 2004-15.

Rural mortgaged properties more likely to have a low appraisal, less likely to be investor properties. Figure 4.2 shows small relative differences between urban and rural mortgaged properties. One can observe that rural properties are less likely to be investor properties and more likely to have an appraisal that comes in below 95% of the purchase price. Furthermore, Appendix Figure A.7 shows the distribution of state mean appraisal-to-purchase price ratios for urban and rural loans and it is evident that the distribution is significantly wider for rural areas. This suggests that rural property appraisals are more challenging since there are fewer transactions and greater differences in property attributes.¹⁰ Lastly, Figure 4.2 shows the distribution of property age in rural areas is weighted towards newer properties relative to urban areas. This conforms to the view that there are fewer supply constraints in these areas.

Figure 4.2 Small Differences in Property Attributes between Urban and Rural Areas as a Percentage of Urban Mean (Positive values indicate rural higher than urban)



Rural Mean	87.6%	4.9%	96.0%	59.4yrs	11.0%	6.4%	12.1%	18.0%	48.5%	3.20	2.01	1,963 sq.ft.	1.049	0.5%
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Statistics based on Fannie Mae acquisitions of purchase money and refinance loans for owner-occupied homes, 2004-15.

* Owner-occupied and investor property shares calculated based on a sample of all loans; not just loans for owner-occupied homes.

** Indicates difference is not statistically significant, t-value of rural coefficient estimate is -0.38.

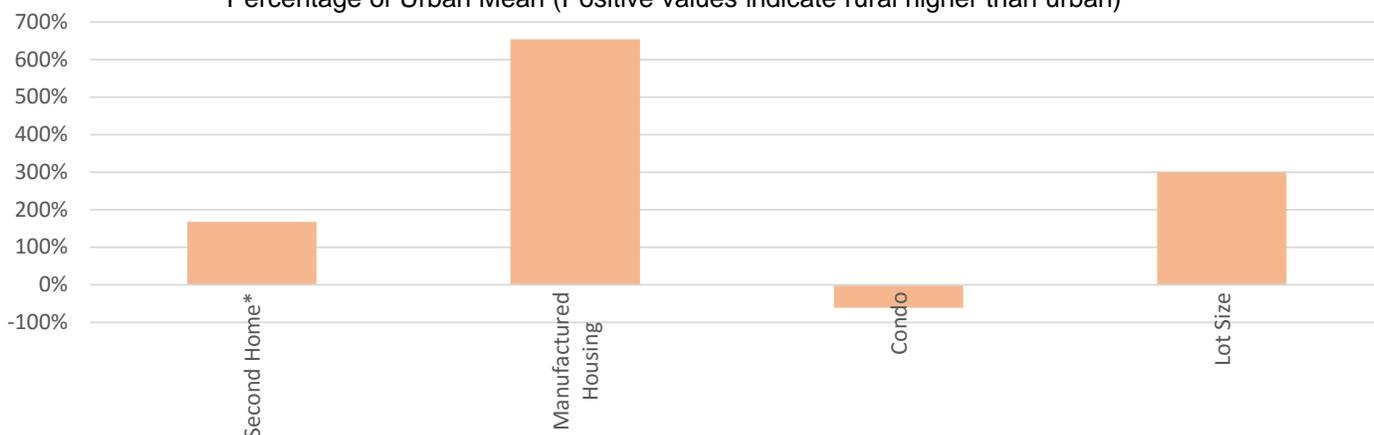
¹⁰ This finding is in line with Cho and Megbolugbe (1996, "An Empirical Analysis of Property Appraisal and Mortgage Redlining", *Journal of Real Estate Finance and Economics*), who show greater appraisal bias in non-metropolitan areas. See also Fannie Mae Lender Letter (LL-2014-02, March 25, 2014) for more discussion of challenges in rural appraisal.



Rural mortgaged properties more likely to be manufactured housing or second homes, and have larger lot sizes.

There are large differences in the probability of mortgages being for second homes and manufactured housing across urban and rural areas. Figure 4.3 shows that manufactured housing loans are over six times more common in rural areas. This is a very large relative difference due to the minute share of manufactured housing loans acquired from urban areas (at 0.3%). The share of rural acquisitions that are for manufactured housing is 1.8%, significantly lower than the manufactured housing share of rural originations in HMDA (7.5%). This is partly explained by Government Sponsored Enterprises (GSEs) not acquiring manufactured housing loans that are considered chattel (personal property). The higher share of second homes in rural areas reflects the fact that vacation homes are more likely to be located in areas that are classified as rural. The remaining differences visible in Figure 4.3, fewer condos and larger lots in rural areas, are unsurprising given differences in the availability of land and characteristics of the built environment between urban and rural areas.

Figure 4.3 Large Differences in Property Attributes between Urban and Rural Areas as a Percentage of Urban Mean (Positive values indicate rural higher than urban)



Rural Mean	Second Home*	Manufactured Housing	Condo	Lot Size
	7.5%	1.8%	2.2%	104,269 sq.ft.

Statistics based on Fannie Mae acquisitions of purchase money and refinance loans for owner-occupied homes, 2004-15.

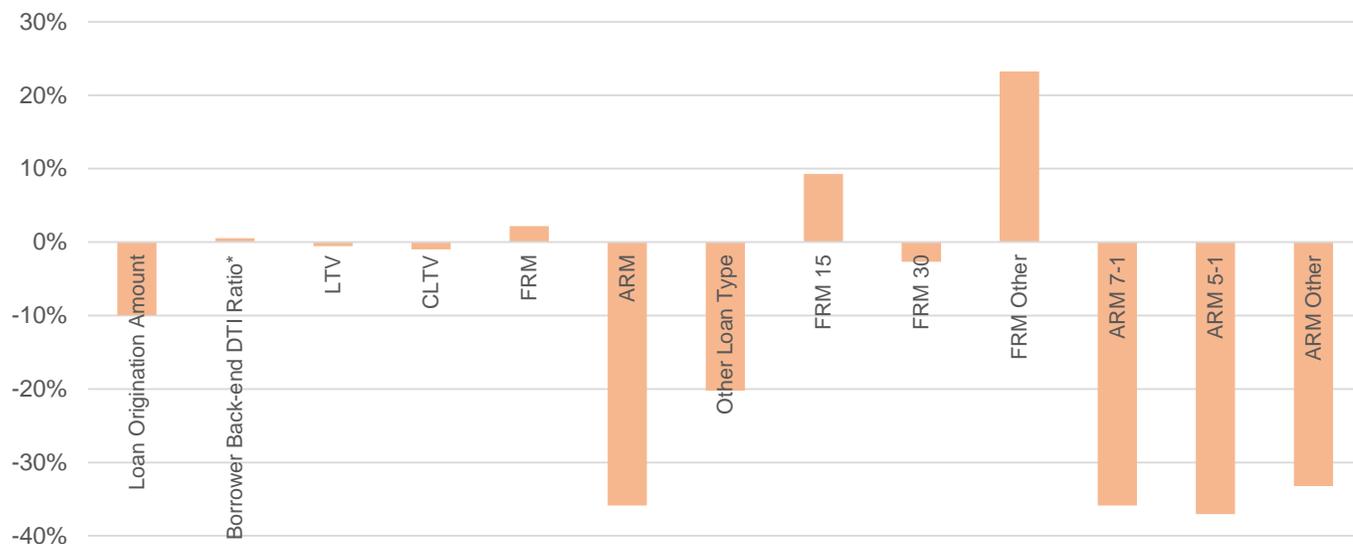
* Second home share calculated based on a sample of all loans; not just loans for owner-occupied homes.

Rural loans are for smaller amounts and less likely to be adjustable rate mortgages. As was visible in the analysis using HMDA data, Figure 4.4 shows that rural loans tend to be for smaller origination amounts. In addition Figure 4.4 highlights interesting differences in the types of mortgage loans that are prevalent in rural areas when compared to urban. Specifically, rural loans are 36% less likely to have adjustable rates and are slightly more likely to have fixed rates (2% more likely). This greater likelihood of having fixed rates is attributable to a greater share of non-30-year fixed rate mortgages (FRMs) in rural acquisitions, e.g. 15- and 20-year FRMs. This greater prevalence of FRMs with terms shorter than 30 years in rural areas is in line with the fact that rural areas loans are for smaller amounts and yet we see no significant difference in borrower back-end DTI ratios because one method through which smaller loan amounts would generate similar back-end DTI ratios is through shorter mortgage terms.¹¹ Another factor contributing to there not being a significant difference in borrower back-end DTI ratios is that rural borrowers typically have both lower incomes and lower loan amounts.

¹¹ The back-end DTI ratio is the ratio of borrower’s total monthly debt to total monthly income.



Figure 4.4 Differences in Loan Attributes between Urban and Rural Areas as a Percentage of Urban Mean (Positive values indicate rural higher than urban)



Rural Mean	\$166.9k	37.0	70.4%	71.8%	96.3%	3.6%	0.07%	27.2%	61.4%	7.8%	0.7%	1.9%	0.9%
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Statistics based on Fannie Mae acquisitions of purchase money and refinance loans for owner-occupied homes, 2004-15.
 * Indicates the difference is not statistically significant at 5% confidence level.

Rural mortgage note rates and spreads are marginally higher than urban. Table 4.5 shows the estimated coefficients for the rural indicator for the difference between urban and rural average mortgage note rates and spread at origination. It is worth noting that the spread at origination is only calculated for 30-year FRMs and is the difference between the note rate on a particular 30-year FRM and the national average 30-year FRM for the corresponding origination month. The difference in both note rates and spread at origination is about 3 basis points. Given the average note rate for the urban areas in the sample is 5.01% this indicates rural notes are on average only about 0.7% higher. This difference would equate to a 5\$ difference in the monthly mortgage payment for a 30-year FRM on a home with the 2015 median existing home price in the US of \$220,000. This statistically-significant difference in note rates across the urban/rural divide may be a function of differences in the credit risk profile of loans across these areas, which this regression does not control for.

Table 4.5 Differences in Mortgage Financing Costs between Urban and Rural Areas

Attribute	30-year FRM Spread At Origination	Origination Note Rate
Coefficient	0.033	0.0343
Standard Error	0.002	0.0029
T-Statistic	16.84	12.21
P Value	< 0.001	< 0.001
Observations	27,665	27,665
R Squared	0.533	0.950
Rural Mean	0.038	5.04
Rural Std. Dev.	0.242	1.07
Urban Mean	0.004	5.01
Urban Std. Dev.	0.236	1.04

Statistics based on Fannie Mae acquisitions of purchase money and refinance loans for owner-occupied homes, 2004-15.



5. Differences across Rural Areas

Thus far the analysis in this report has generally treated all rural areas as one broad group. However, important differences exist across rural areas that are worth emphasizing. Table 5.1 contrasts certain attributes of rural mortgages and borrowers in three groups of states that were initially highlighted in Figure 3.2. In Group 1 are states with the highest share of loans originated in rural areas (MT, ND, SD, VT, WY); in Group 2 are states that have the largest number of total loans originated in rural areas (CA, TX); and in Group 3 are states with both an above median share of loans originated in rural areas and that individually account for at least 2% of the total rural market reported under HMDA (AL, IN, KY, MN, MO, NC, OK, SC, TN, WI). Note that the information displayed in Table 5.1 is based on Fannie Mae loan acquisitions, in 2013 to 2015, from these groups of states.

High rural share states have younger, better credit score rural borrowers, and more manufactured housing rural loans. Table 5.1 shows that states in Group 1 actually have the lowest average median borrower age, highest credit scores, and largest share of loans for manufactured housing. The first two facts are interesting given that rural lending on average has older and lower credit score borrowers than urban areas, thus emphasizing the need to highlight some differences across rural areas. Note that these conclusions hold whether Vermont is or is not included in the average. Even though Vermont is one of the states with the highest rural share of loans both in its geographic location and mortgage attributes (e.g. low manufactured housing share and high share of second homes) are sufficiently unequal that it makes sense to compare averages with and without its inclusion.

States with high rural share and large volume of rural loans have lower incomes, loan amounts and back-end DTI ratios. These attributes of Group 2 states are in line with the differences between urban and rural borrowers, which showed that rural borrowers on average also have lower incomes, loan amounts and back-end DTI ratios relative to urban. This shows that although these states may be attractive to target as a lender if one wanted to focus on rural lending, these characteristics may require a tailored approach.

Table 5.1 State-Level Summary Statistics for Rural Loans, 2013-2015

State Name	Borrower Age	FICO Score	Loan Amount (\$1,000)	Property Age	Monthly Income (\$)	Monthly Housing Expenditures (\$)	Back-end DTI Ratio	Manufactured Housing**	Second Homes**
Group 1: States with highest rural share of total state loans and low number of loans in HMDA									
MT	44	761	190	17	6,155	1,312	34.6%	3.8%	9.8%
ND	37	752	189	18	7,298	1,374	32.7%	2.6%	1.8%
SD	40	762	148	20	6,169	1,143	32.6%	1.3%	5.7%
VT	45	751	160	34	6,093	1,325	36.3%	0.9%	21.3%
WY	42	756	200	20	6,909	1,331	33.7%	4.9%	5.1%
Average	41	756	177	22	6,525	1,297	34.0%	2.7%	8.7%
Avg. No VT	41	758	182	19	6,633	1,290	33.4%	3.2%	5.6%
Group 2: States with large share of total rural market and above average share of state loans that are rural AL, IN, KY, MN, MO, NC, OK, SC, TN, WI									
Average	45	749	140	20	5,856	1,064	32.5%	2.1%	10.2%
Group 3: States with highest number of rural loans in HMDA but with rural loans accounting for a small share of total state loans									
CA	48	754	261	26	7,609	1,947	37.3%	3.4%	11.4%
TX	44	743	177	10	7,752	1,493	34.3%	1.4%	8.3%
Average	46	748	219	18	7,681	1,720	35.8%	2.4%	9.8%

* Median attributes of Fannie Mae acquisitions of purchase money loans mortgage for owner-occupied homes in 2013-15.

* Share of all state's Fannie Mae acquisitions of purchase money mortgage loans in 2013-2015.



Rural manufactured housing loans concentrated in the South and Southwest. Appendix Figure A.8 shows that rural manufactured housing loans are concentrated in states in the South and Southwest of the country. This stresses how, even though rural areas have more manufactured housing loans than urban and there is a tendency to associate rural lending with manufactured housing lending, there is a clear spatial segmentation of rural manufactured housing lending activity.

Owner-occupied homes' share in rural areas is highest in Midwest. The previous section highlighted how rural loans are less frequently for owner-occupied and investor properties and more likely to be for second homes. Although HMDA data cannot distinguish between second home and investor properties, the spatial distribution of owner-occupied homes' loan share by county, shown in Appendix Figure A.9, indicates that areas along the coast and in Western states actually have below rural average owner-occupied mortgage shares. Hence these areas have higher second home and/or investor property shares than other rural areas.

6. Changes in Differences between Urban/Rural and Across Rural Mortgage Lending

Figure 6.1 presents some of the most salient changes in the differences between urban and rural mortgage lending over the last decade. Once again, the reported differences are the estimated coefficients for the rural area indicator as a percentage of urban mean.

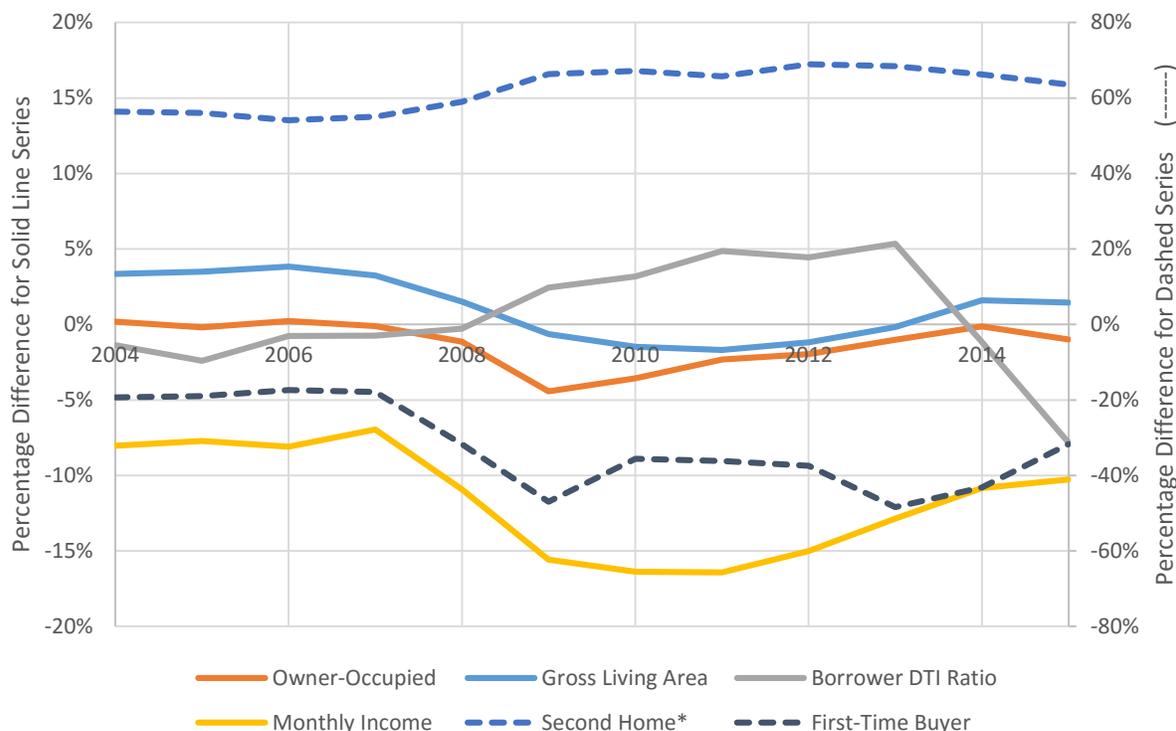
Rural first-time buyer share fell as second home buyer share increased relative to urban post-Housing Crisis. As second-home mortgages increase in rural areas relative to urban post-Housing Crisis, owner-occupied and first-time homebuyer shares fell since second-home buyers cannot be classified as owner-occupied or first-time buyers. This may represent more affluent buyers seizing opportunities to purchase a second home in rural areas where house prices have fallen and defaults risen post-Housing Crisis although this possible explanation warrants further research.

Rural borrower incomes fall and DTI increases post-Housing Crisis relative to urban. Rural borrower monthly income falls post-Housing Crisis and is accompanied by DTI increases. These two factors go hand-in-hand and may reflect the greater economic hardship facing rural borrowers at the time when compared to urban borrowers as was seen when looking at overall income trends, where, although urban area incomes fell more during the Housing Crisis, they recovered faster in the post-Housing Crisis period.

Gross living area differences diminished post-Housing Crisis. This last salient change may reflect both the higher prevalence of second-home buyers and the greater economic hardship experienced in rural areas. Economic hardship would likely induce buyers to purchase smaller homes, while the increase in second home share could be associated with urban buyers purchasing rural homes that have similar characteristics to their urban homes. More research needs to be undertaken in order to determine which of these two stories may have had a greater influence on this diminishing of living area differences across the urban/rural divide.



Figure 6.1 Differences over time between urban and rural mortgages as a percentage of yearly urban means (Positive values indicate rural higher than urban)



Statistics based on Fannie Mae acquisitions of purchase money and refinance loans for owner-occupied homes, 2004-15.
 * Second home share calculated based on a sample of all loans; not just loans for owner-occupied homes.

Rural borrower age increased relative to urban over the last decade. In conformity with what is visible in demographic profile differences between urban and rural areas, rural borrower age also increased relative to urban borrowers during this period.

Borrower age differences across rural markets widening. As the decade has progressed, differences in borrower age across rural areas have become wider, emulating the differences between urban and rural borrower age.

Differences across rural areas most pronounced in lead up to the Housing Crisis. A series of characteristics of rural mortgages exhibited wider variation across rural areas in the 2005 to 2008 period. Borrower attributes such as FICO scores, first-time homebuyer share, and monthly housing expenditures are examples of this. With regards to property attributes, differences in property age were widest in this 2005-2008 period. This likely reflects housing expansion in certain rural areas, namely suburban and exurban areas, where a significant amount of new properties were built during this period in contrast to other more remote rural areas that may not have been affected. Loan attributes that exhibited a similar pattern of large differences across rural areas in the lead up to the Housing Crisis, but have normalized since then, include loan type (fixed or adjustable rate mortgages) and loan origination amount.

7. Conclusion

This report has highlighted key characteristics of rural mortgage borrowing. Rural loans account for between 14% and 20% of conventional owner-occupied loan originations by loan amount and volume, respectively. The analysis conducted indicates there are important differences between urban and rural areas in terms of borrower attributes, property attributes, and loan characteristics. Differences across rural areas are also highlighted, indicating that rural loans should not be viewed as one homogenous group.



Contrasting the economic and demographic environment across the urban/rural divide we conclude that: the rural share of the population is falling and ageing at a faster rate; rural incomes are lower, although they were less affected by the Great Recession; rural employment is more concentrated in fewer industry groups; and although rural home prices are still lower, on average, than urban home prices, rural home prices rose more from 2004 to 2008 and had a less severe downturn post-2008.

Key differences between urban and rural mortgage lending that are highlighted in this research include: rural borrowers tend to be older and have lower incomes; rural mortgaged properties are more likely to be manufactured homes, more commonly second homes, have larger lot sizes and are more likely to have a low appraisal relative to purchase price; and rural loans on average are for smaller loan amounts, less likely to be adjustable rate mortgages, and more likely to be shorter than 30-year term fixed rate mortgages.

Important similarities between urban and rural mortgage are visible in the following attributes: borrowers FICO scores, back-end DTI and loan-to-value ratios, owner-occupied property share, and certain property attributes (number of bedrooms and bathrooms, gross living area).

Throughout, this analysis has been restricted to the definition of rural areas according to FHFA's 2015 Proposed Duty to Serve rule. Future research on rural lending would benefit from exploring how differing definitions of what constitutes a rural area may impact some of the key differences identified in this report.

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Appendix

Table A.1 2010 Population and Land Area Breakdown of 2010 Rural-Urban Commuting Area (RUCA) Codes

RUCA Code	Description	Number of Tracts	2010 Population	Pop (%)	Land (sq. miles)	Land (%)	Rural under DTS Definition
1	Metropolitan area core: primary flow within an urbanized area (UA)	51,903	225,303,582	73.0%	193,845	9.4%	0.1% of Pop. / 0.8% of Land in RUCA Code
2	Metropolitan area high commuting: primary flow 30% or more to a UA	6,833	29,839,843	9.7%	496,597	24.1%	Yes
3	Metropolitan area low commuting: primary flow 10% to 30% to a UA	653	2,667,068	0.9%	64,514	3.1%	Yes
4	Micropolitan area core: primary flow within an Urban Cluster of 10,000 to 49,999 (large UC)	4,236	18,452,395	6.0%	91,361	4.4%	74.7% of Pop./ 76.7% of Land in RUCA Code
5	Micropolitan high commuting: primary flow 30% or more to a large UC	1,972	7,739,324	2.5%	257,227	12.5%	Yes
6	Micropolitan low commuting: primary flow 10% to 30% to a large UC	411	1,596,991	0.5%	45,148	2.2%	Yes
7	Small town core: primary flow within an Urban Cluster of 2,500 to 9,999 (small UC)	2,159	9,240,127	3.0%	126,504	6.1%	76.8% of Pop./ 81.2% of Land in RUCA Code
8	Small town high commuting: primary flow 30% or more to a small UC	827	2,798,234	0.9%	141,425	6.9%	Yes
9	Small town low commuting: primary flow 10% to 30% to a small UC	343	1,232,918	0.4%	45,057	2.2%	Yes
10	Rural areas: primary flow to a tract outside a UA or UC	3,442	9,875,056	3.2%	602,675	29.2%	Yes
99	Not coded: Census tract has zero population and no rural-urban identifier information	278	0	0.0%	128	0.0%	Yes
United States (excludes PR)		73,057	308,745,538		2,064,481		24.9% of Pop./ 88.5% of Land

Source: Author computations based on U.S. Department of Agriculture, Economic Research Service, 2010 RUCA codes.



Table A.2 Historic Trend in US Rural Population Share (1900-2010)

Year	Urban	Rural	Share Rural
1900	30,214,832	45,997,336	60.40%
1910	42,064,001	50,164,495	54.40%
1920	54,253,282	51,768,255	48.80%
1930	69,160,599	54,042,025	43.90%
1940	74,705,338	57,459,231	43.50%
1950	96,846,817	54,478,981	36.00%
1960	125,268,750	54,054,425	30.10%
1970	149,646,629	53,565,297	26.40%
1980	167,050,992	59,494,813	26.30%
1990	187,053,487	61,656,386	24.80%
2000	222,360,539	59,061,367	21.00%
2010	249,253,271	59,492,267	19.30%

Source: US Census Bureau, Urban and Rural Classification.

See: <https://www.census.gov/geo/reference/urban-rural.html> and

<http://www.census.gov/geo/reference/ua/urban-rural-2010.html>



Table A.3 Changes in the Industry Groups with Largest Share of Employment from 2000 to 2014

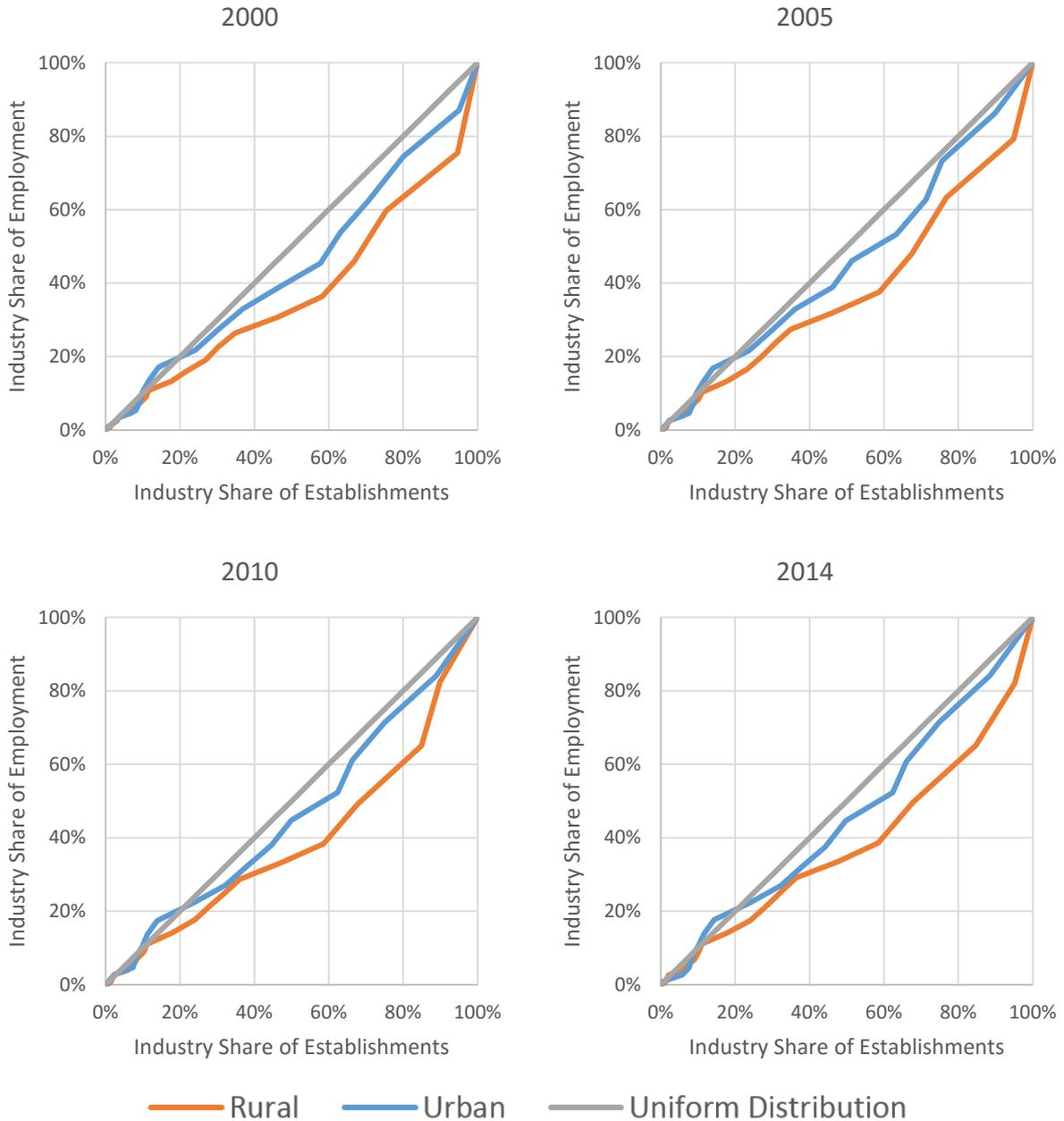
2000			2014		
<u>Rural 5 Largest Industry Groups</u>			<u>Rural 5 Largest Industry Groups</u>		
Industry Group	Share of Establishments	Share of Employment	Industry Group	Share of Establishments	Share of Employment
Manufacturing	5.4%	24.5%	Manufacturing	4.8%	17.9%
Retail Trade	19.2%	15.8%	Health Care and Social Assistance	10.5%	17.0%
Health Care and Social Assistance	8.6%	13.8%	Retail Trade	16.8%	15.4%
Accommodation and Food Services	8.6%	9.6%	Accommodation and Food Services	9.4%	11.2%
Construction	11.9%	5.6%	Construction	10.8%	5.1%
Total for Largest Industry Groups	53.7%	69.2%	Total for Largest Industry Groups	52.3%	66.5%
Administrative and Support and Waste Management and Remediation Services *	3.4%	3.6%	Professional, Scientific, and Technical Services *	7.0%	3.1%
<u>Urban 5 Largest Industry Groups</u>			<u>Urban 5 Largest Industry Groups</u>		
Industry Group	Share of Establishments	Share of Employment	Industry Group	Share of Establishments	Share of Employment
Manufacturing	5.0%	12.9%	Health Care and Social Assistance	11.5%	15.8%
Retail Trade	15.0%	12.6%	Retail Trade	13.6%	12.7%
Health Care and Social Assistance	9.5%	12.2%	Accommodation and Food Services	8.9%	10.8%
Accommodation and Food Services	7.5%	8.5%	Manufacturing	3.7%	8.5%
Administrative and Support and Waste Management and Remediation Services	5.3%	8.4%	Professional, Scientific, and Technical Services	12.6%	7.6%
Total for Largest Industry Groups	42.3%	54.6%	Total for Largest Industry Groups	50.3%	55.4%
Construction *	9.70%	5.82%	Construction *	8.5%	4.8%

* Industry group included in table because it is in the five largest industry groups for the other urban/rural category.

Source: Author computations based on U.S. Census Bureau, 2000, 2014 County Business Patterns (CBP).



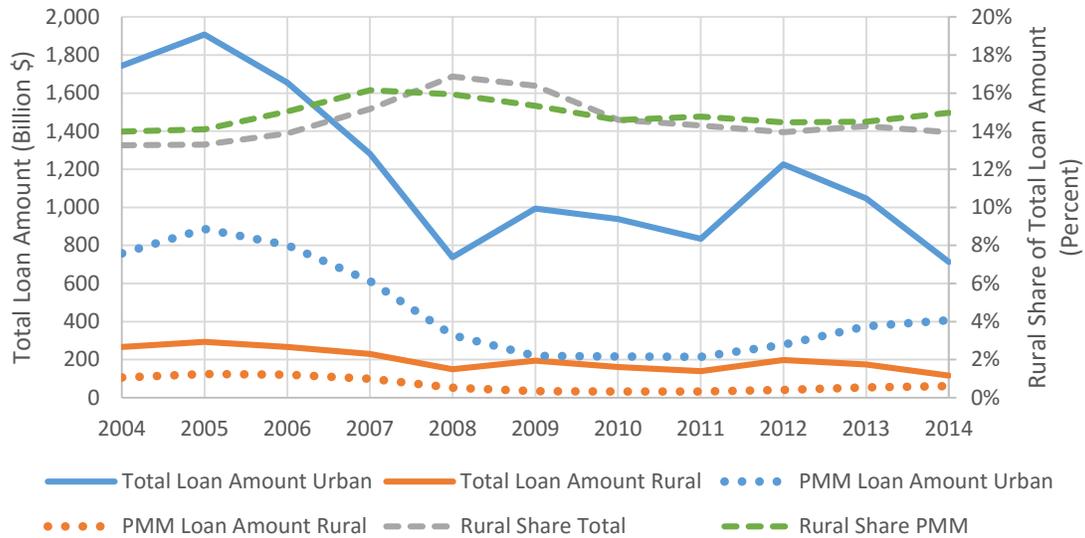
Figure A.4 Evolution of Industry Concentration from 2000-2014



Source: Author computations based on U.S. Census Bureau, 2000, 05, 10, 14 County Business Patterns (CBP).

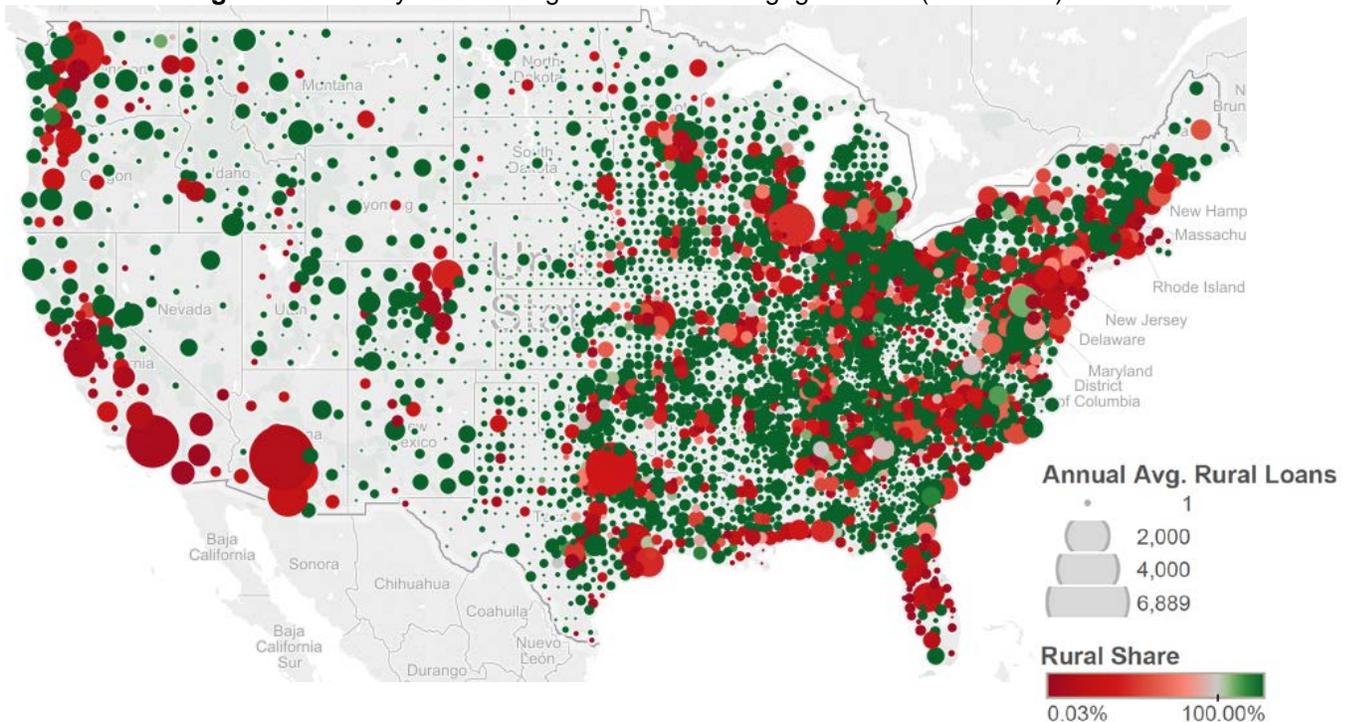


Figure A.5 Rural Mortgage Market Sizing by Total Loan Amount (2004-14)



Statistics based on HMDA conventional, first-lien originations for owner-occupied single-family and manufactured housing, 2004-2014.

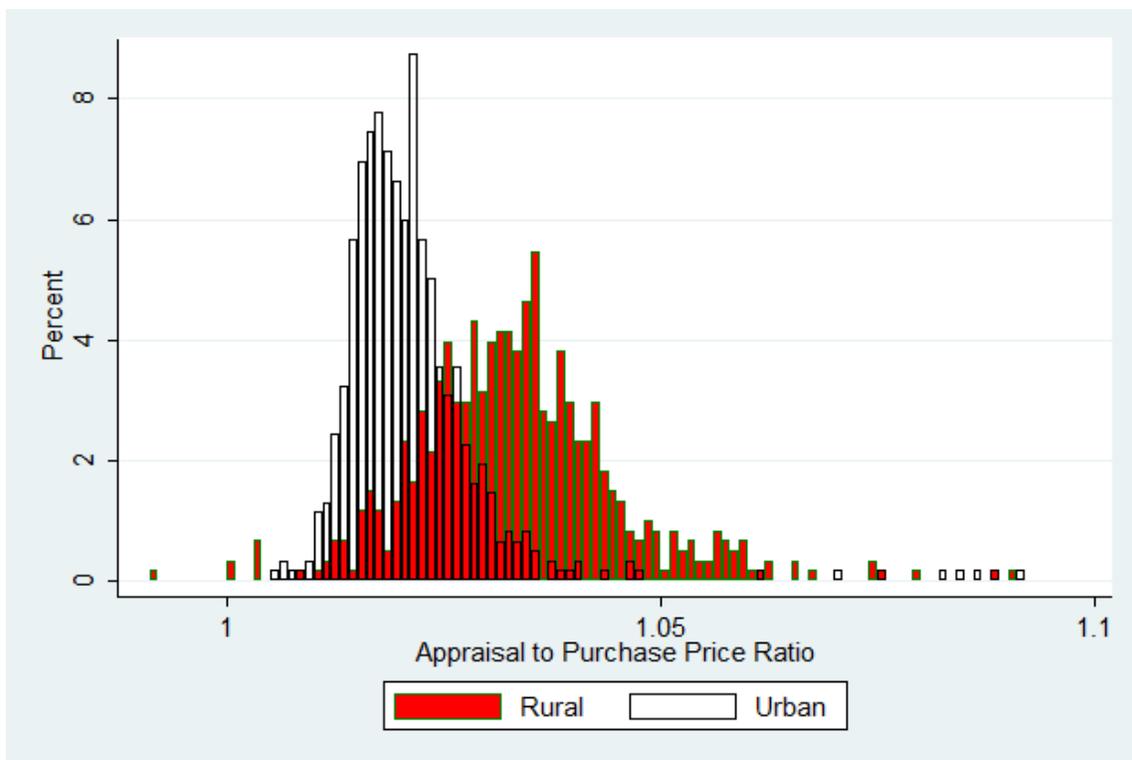
Figure A.6 County-Level Sizing of the Rural Mortgage Market (2004-2014)



Statistics based on HMDA PMM first-lien originations for owner-occupied single-family and manufactured housing, 2004-2014.

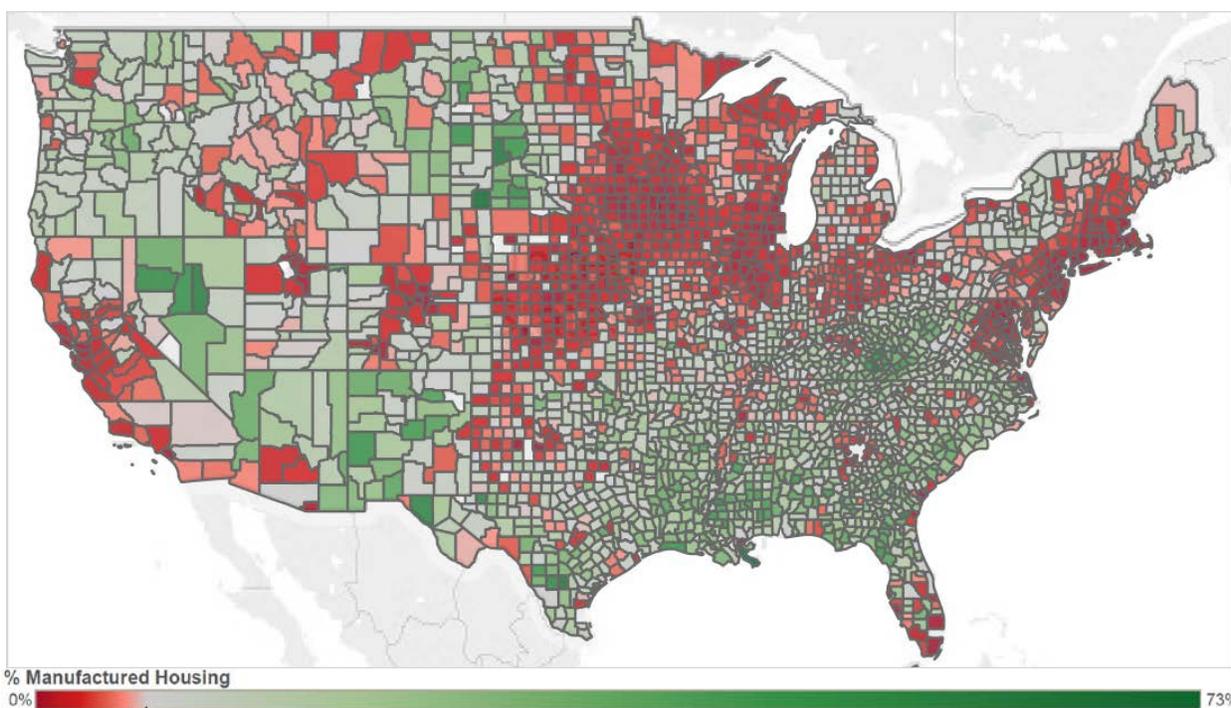


Figure A.7 Distribution of State Mean Appraisal-to-Purchase Price Ratios for Urban and Rural Areas



Statistics based on Fannie Mae acquisitions of purchase money and refinance loans for owner-occupied homes, 2004-15.

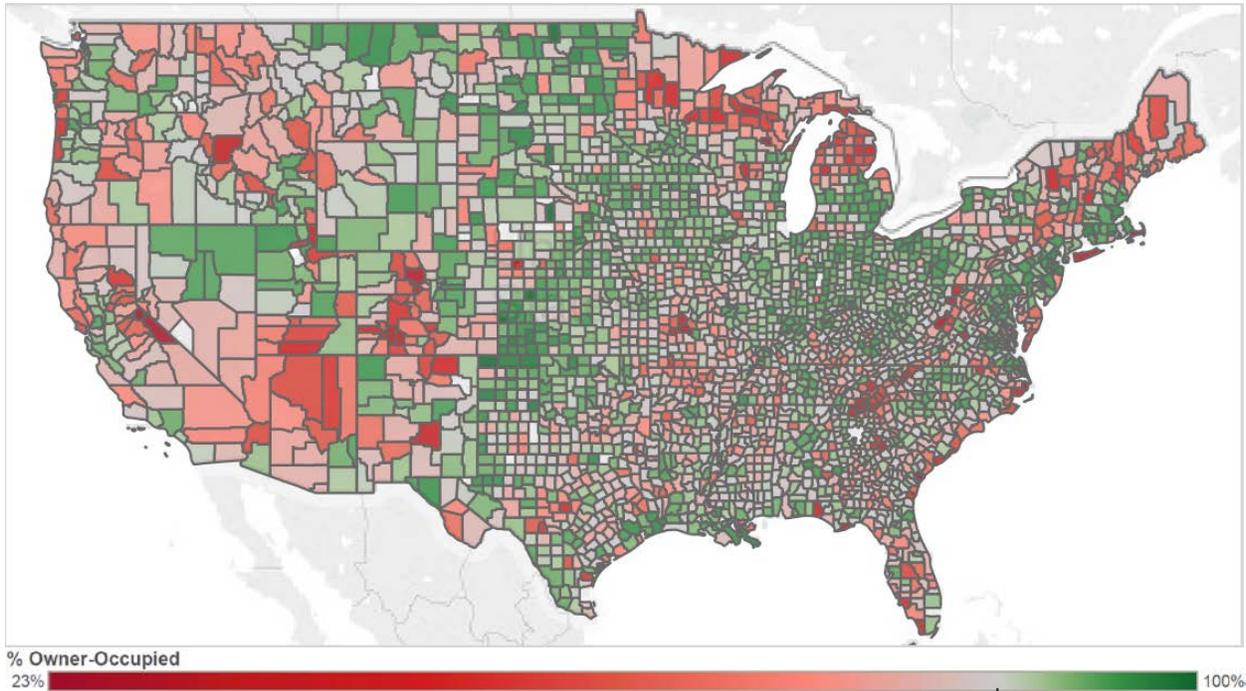
Figure A.8 Rural Manufactured Housing Loan Share by County, 2004-14



Statistics based on HMDA PMM first-lien originations for single-family and manufactured housing, 2004-2014.



Figure A.9 Rural Owner-Occupied Housing Loan Share by County, 2004-14



Statistics based on HMDA PMM first-lien originations for single-family and manufactured housing, 2004-2014.