**ORIGINAL ARTICLE** 



# Tracking Urbanization and Exurbs: Migration Across the Rural–Urban Continuum, 1990–2016

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## Abstract

This paper summarizes annual migration patterns across the rural–urban continuum in the USA between 1990 and 2016. We introduce a modified rural–urban continuum classification, the Rural–Urban Gradient (RUG). The RUG holds metropolitan classification constant, effectively designates exurbs, and distinguishes central city core counties in major metropolitan areas from their suburbs and exurbs. The RUG is used to compare, over time and across regions, net migration, and migration efficiency using annual county-level data from the Internal Revenue Service. Results show how migration patterns correlated with changes in demographics and housing depending on counties' location along the RUG. We also describe the extent to which rural migration flows converged in counties at metropolitan peripheries and concentrated in the South and West, thus shaping widening disparity across US rural contexts.

Keywords Rural · Rural migration · Net migration · Urbanization · Exurbs

# Introduction

In the rural<sup>1</sup> USA, migration is both a driver and an outcome of social and economic well-being (Weber et al. 2007). As a growing number of counties record more deaths than births—the phenomenon known as natural decrease (Johnson et al. 2015),

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<sup>&</sup>lt;sup>1</sup> We use the terms "rural" and "non-metropolitan" interchangeably, except when referencing a formal category, which we accompany with a specific explanation. We use the term "urban" to describe the character of cities and metropolitan areas, and the term "metropolitan" to describe the boundaries designated as such by the US Office of Management and Budget (OMB).

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migration is essential for sustaining rural communities. With fewer births, robust in-migration coupled with limited out-migration confer the advantages of economic growth, including appreciating property values and investments in local business (Day and Barlett 2000; Nelson et al. 2010). Conversely, places lacking in-migration suffer depressed home values, service cuts, and limited business prospects.

This paper engages with the question of how important nearby cities are for bringing newcomers to rural places. Most rural American counties are in a period of sustained population decline spanning nearly a century (Johnson and Lichter 2019), but growth from migration persists in specific places. We know that these patterns relate to economic bases and associated natural resources. For example, retirement destinations, places with natural amenities and outdoor recreation opportunities, and places experiencing extractive booms all tend to receive more in-migration (Johnson et al. 2005; McGranahan 1999; Brown and Glasgow 2008; Winkler et al. 2012). This paper focuses on rural migration's association with urban centers-in a pattern whereby rural counties at the metropolitan periphery experience net in-migration while more remote rural places experience net out-migration (Ulrich-Shad and Duncan 2018; Johnson and Lichter 2019). Further, it identifies exurbs as rural counties newly incorporated into metropolitan areas, distinct from established suburban counties. Our analyses describe trends over time across four census regions, using annual county-level data provided by the US Internal Revenue Service between 1990 and 2016 (IRS SOI). This 25-year period includes the economic expansion of the 1990s and early 2000s, as well as the "Great Recession" of 2007-2010, and subsequent recovery.

The paper makes two key contributions. First, we introduce a rural–urban continuum classification, which we call the Rural–Urban Gradient (RUG). The RUG distinguishes central city core counties in major metropolitan areas from their suburbs and exurbs, which is critical for observing more precisely how migration patterns occur along the rural–urban continuum (Plane et al. 2005). It identifies exurban counties as those that changed in official classification from rural to metro. However, by categorizing exurbs as rural–consistent with their original status, the RUG allows for simpler comparison over time than other classification schemes. Our results show that exurban counties whereby far the most consistently appealing rural spaces (to migrants) in all regions of the US between 1990 and 2016, thus bringing increasing numbers of people into a hybrid *rurban* (rural–urban– Lerner and Eakin 2011) socioeconomic environment. The implication of this, we argue, is that a large and growing proportion of rural Americans nurture a shared cultural understanding of rural life that is anchored to nearby metropolitan areas.

Second, we argue that the metro-skewed distribution of migration gains we observe fits within the conceptual umbrella of urbanization, as opposed to deconcentration. Much of the literature on migration gains in particular rural places (exurban, recreation, retirement, etc.) entangles the issue conceptually with "counterurbanization" (Mitchell 2004) or "deconcentration" (Frey 1987; Frey and Johnson 1998; Johnson 2003). However, research implicitly overstates the national magnitude of these phenomena by measuring percentages, thus finding growth in places that started with small initial populations. As noted by Brown and Cromartie, percentage change is an accurate proxy and a useful concept for ascertaining changes of

potentially local importance (Brown and Cromartie 2006). This paper, by contrast, emphasizes national level impacts. Instead of percentages, it considers migration volumes, calling attention to the places where large migration flows converge consistently over decades, wherein households and incomes accumulate en masse. Our findings reveal counterurbanization and deconcentration to be more tenuous from a national perspective, as most migration gains in the rural US reflect an overarching pattern of urban agglomeration as the more urban (or urban proximate) a county is, the more in-migration it sees.

## Literature

#### Urbanization & Deconcentration

Research now consistently finds that the issues rural America faces are diversifying thanks to different migration experiences (Hamilton et al. 2008; Ulrich-Schad and Duncan 2018). Popular destinations grapple with managing development, which includes affordable housing and environmental conservation (Golding 2012, 2016). At the other extreme, shrinking communities are in a race to attract newcomers, to preserve their essential institutions like schools, hospitals, and churches (Lu and Paul 2007; Peters 2019).

This diversity nests within a larger trend toward urbanization, which scholars studying rural population loss and the brain-drain appreciate fully (McGranahan and Beale 2002; Carr and Kefalas 2009). Urbanization is not a demographic phenomenon confined to current and emerging urban cores but rather a social phenomenon manifest in how society organizes physically and socially around dense settlement. As luminary Human Ecologist Amos Hawley wrote in 1971:

Urbanization, far from being merely a process of segregating in a few localities the part of a society's population engaged in non-extractive industries, is rather a comprehensive reorganization of the entire structure of the society leaving no sector or sphere untouched. "Town" and "country" are merged under a single set of institutions and common set of processes. (Hawley 1971, 219).

Twenty-five years of American migration data expose a particularly American version of the same urbanization process advancing worldwide, wherein a growing proportion of the world lives in areas of urban density (Angel 2011; EAA 2006). With excellent roads, widespread car ownership, and relatively cheap gasoline, American urbanization is characterized by rural terrain and rural communities becoming more tightly integrated in metro-adjacent settlement patterns, often with integrated social infrastructures like transit authorities and park systems. That is, urbanization includes not just growth in urban cores and suburbs, but in exurban places that rely on urban employers, commerce, and transit hubs.

These emergent settlement patterns are what draw researchers to identify and study exurbanization (Berube et al. 2006), noting that it constitutes a central underlying component of what Lichter and Brown (2011) label a "paradoxical urbanization

or urbanism", through which the urban–rural concepts are becoming more fluid and harder to recognize. Rural America, for example, is culturally familiar despite being personally foreign to a growing number of Americans. Parts of it are quickly diversifying in terms of race and ethnicity, and while it still produces most of our food, farmers are fewer and fewer. High speed internet and overnight delivery might make one's commercial experience in rural America virtually indistinguishable from some urban areas. But this paradox plays out differently across space, as revealed by the opposite fates confronting migration-gaining communities and migration-losing communities. Recognizing this disparity, continued focus on historical dimensions of rurality, like remoteness, isolation, and self-sufficiency is warranted, because while urbanization is a monolithic and paradoxical social force, it leaves very different rural outcomes in its wake.

Rural population research is inconsistent in how it makes sense of rural migration gains that persist amidst urbanization. For example, research in the US focusing on waves of rural growth in the 1970s and 1990s often nest implicitly or explicitly within the framework of population deconcentration (See for example, Frey 1987; Frey and Johnson 1998; Johnson 2002). Some research on recreation and retirement migration portray it as a location-specific anomaly in an otherwise urbanizing nation (Johnson and Cromartie 2006), while other research frames it as a model for communities to emulate (Keith et al. 1996; Reeder and Brown 2005). However, it is contradictory to expect that something anomalous can be easily replicated. Further, urban adjacency is widely recognized as important in explaining rural migration (Johnson 1989; Johnson and Stewart 2005), but literature rarely juxtaposes the small flows of remote rural movers against the large volumes of movers settling in exurban and metro-adjacent places, which understates the scale of urbanization and overstates the prevalence of deconcentration.

Parallel research in the United Kingdom has focused on migration "down the urban hierarchy", finding that for several decades most moves are de-concentrating because they occur in the direction of lower density (Champion 1998, 2005). While these phenomena are characterized as deconcentration and counterurbanization, it's difficult to distinguish them from increasingly diffuse urban growth without accounting for the types of rural places to which people move. For example, moving "down the urban hierarchy" often happens when households relocate to suburbs and exurbs to save money or pursue home ownership, which is increasingly necessary as major cities become globally desired real estate markets. These are often moves that underscore a reluctance to stray too far from cities, not necessarily moves that evince the resurgent appeal of rural areas.

#### Exurbs and Deconcentration

Studying the urban dimensions of rural migration has presented a challenge in the past because migration research usually frames moves through a lens of dichotomous concepts: urban or rural. Sociological studies explore interactions between movers' agency and the social and economic structures they face, and for decades scholars have probed rural migration choices within this dichotomous frame. Qualitative studies in the UK observed that decisions were motivated by aversions to urban settings or preference for rural settings (Hallyday and Coombes 1995). In other words, the decision to move to a rural place entails not simply attraction, but some balance of attraction to rural characteristics and repulsion by urban characteristics. Responding to population gains in the 1990s that echoed similar gains in the 1970s (Johnson and Beale 1998), Frey and Johnson (1998) held that with fewer anchors like work and family, new waves of US households were electing to live in less dense communities. The authors coined the term "Selective Deconcentration" to characterize this era of urban–rural migration from select places. The term implied that deconcentration had become ingrained in many movers' preferences because so many movers' destinations were lower density than their origins.

Evidence suggests, however, that many rural movers, express a preference for limited deconcentration at best, or a deconcentration nested within a hierarchical preference for urban amenities. For example, participants across a multi-site Wisconsin study nearly universally cited metro-proximity as an important factor influencing their move to a rural community (Stoecker et al. 2017). That is, residents extolled the benefits of living close to a city, but not in the city. These benefits included convenient commuting for work, and the ease of access to cultural events, shopping, and airports. The benefits of proximity observed in the Wisconsin study closely match those identified in a study of exurbanites conducted in Oregon in the early 1990s (Davis et al. 1994). While it seems logical to categorize these priorities as decidedly suburban, that they resonate in people and places categorized as rural underscores the widening salience of a paradoxical urbanism (Lichter and Brown 2011) in which the ideal rural life is tethered to a nearby city.

Paradoxical urbanism plays out in the "exurban" space (exurbs) at the peripheries of metropolitan areas. While no concise definition exists, exurbs are typically understood to be rural spaces with low density housing on the far outskirts of cities, where labor markets and services of the urban core are accessible via commute (Davis et al. 1994). For decades such places have been the fastest growing rural locations on account of their abundance of open land, relatively affordable housing, and access to urban cores (Fuguitt et al. 1998; Morrill 1992). Citing their hybrid characteristics, Berube et al. (2006) note that exurbs have drawn the attention of scholars from multiple disciplines endeavoring to identify and better understand their economic profiles, cultural and political significance, and environmental impacts. They note, however, that exurbs have no conventional classification, leaving researchers to identify them using various measures including housing density, distance from metro cores, racial composition, etc. (ibid).

Geographic regions figure prominently in American population research, but greater synthesis is needed between urban and rural perspectives. Studies of rural amenities and recreation have attributed recreation and retirement migration gains in southern and western states to weather and climate (McGranahan 1999). Broader studies of distribution usually note that migration writ large relates not necessarily to weather, but to specific urban economies undergoing rapid growth in the US South and Southwest, creating a prosperous "sunbelt" that siphons residents away from the Northeast and Midwest (Frey 2001, 2002). For example, domestic migration has been a factor fueling growth in California, Texas, and Florida to such an extent that

the three states account for half of all American population growth (Mather 2015). Of course, synergy between physical climate and economic climate helps drive moves to the South and West, especially given the spin-off effects of tourism and recreation (Day and Barlett 2000). Synergy between urban and rural locales provides equally important context for understanding exurban migration nationally, and particularly in these fast growing regions (Berube et al. 2006; Linkous 2019).

Migration push and pull factors are not well understood in relation to exurbs. Like the "selective deconcentration" frame, emphasis on structure in rural migration research has tended to focus on factors pushing away from cities and pulling toward rural destinations. What remains undertheorized in this push–pull framework is the way that positive urban characteristics impact rural migration, in other words, the way that closeness to a city remains appealing even to migrants typically identified as rural. Scholars tend to emphasize movers' pursuit of lower density as a rural preference, rarely considering how movers' pursuit of metro-adjacency is simultaneously an urban preference. This is despite the fact that metropolitan counties now house around 50% of rural Americans (NAS 2016), and that many moves to rural counties reflect not a complete aversion to all things urban, but an expressed preference for some degree of urban proximity. In sum, the urbanizing of rural migration matters for both how we think about urban and metropolitan areas and how we understand rurality, but quantitative studies do not tend to engage with this particular issue explicitly.

The essence of this argument has played out in previous debates about metro concentration vs deconcentration, and around the issue of county reclassification (Fuguitt et al. 1998). US agencies reclassify rural counties as urban when they grow and/or show integration with neighboring metropolitan areas. Gottlieb (2006) describes the confusion reclassification causes in understanding migration across the rural-urban continuum by likening the study of population deconcentration to running down an up escalator, as it becomes less clear what movers are seeking if their destinations are treated identical to their origins (Gottleib 2006). Reclassifying some non-metropolitan counties as metropolitan after each census paints an artificially bleak portrait of rural population loss, as the counties that remain "rural" have sustained near continuous decline while those reclassified as "urban" grew rapidly (Johnson and Lichter 2019). Similarly, reclassification results in more affluent rural residents being sorted away from those who are generally poorer (Lichter and Brown 2011). The practice of reclassification has fueled disagreement over whether the US became more or less urban at various points in time. Gottleib argues that reclassification obscured trends in the 1970s and 1990s, when rather than seeking less density, urban-rural movers sought to maintain a previously experienced status-quo level of density that metro cores had surpassed. He argues that if fixed geographies were used to study migration changes over time, even the 1970s and 1990s would offer evidence of population concentration, rather than deconcentration (ibid).

These issues explicate the need for a measure of the rural-urban continuum that controls for changes in classification as metropolitan or non-metropolitan, which is especially important for studies that investigate change in population and socioeconomic conditions over time. While ERS RUCC codes effectively classify rural counties accounting for urban adjacency and scale, their reliance on fluid metropolitan designations has made it difficult to track rural populations residing in reclassified territory (NAS 2016). Our work here assesses the appeal of cities to rural movers across a 25-year period, across the rural–urban continuum, and across regions, which are known to vary widely in their appeal to domestic migrants over the study period (Frey 1996).

## Data & Methods

#### **Measuring Migration**

This study relies on county-level annual migration data from the Statistics of Income (SOI) office of the IRS, based on tax filers' address changes. The IRS generates a migration flow count by aggregating tax filers and dependents that move across county boundaries. The IRS releases data back to the 1991 filing year, which reports moves that occurred between 1990 and 1991. The IRS data offer a count of most flows between all county pairs and the aggregate number of inflows and outflows for each county in the USA.

IRS migration counts are the best available measure of annual, county-level migration patterns (Molloy et al. 2011) because they offer both inflows and outflows as opposed to only net migration estimates, and derive from documented household moves rather than projections. These data illuminate mobility patterns with a level of detail that one loses when relying on data aggregated over 5 or 10 year increments. Most importantly, it foregrounds migration responses to noteworthy events, such as economic shocks, policy changes, and natural disasters. However, there are important limitations to IRS data (Gross n.d), which we discuss in detail in "Appendix A".

This paper examines each county's total domestic inflows, outflows, and nonmigrants between 1990 and 2016. It uses county-aggregated data and not countyto-county flows data because the IRS suppresses flow data for specific county pairs when fewer than 10 households move from one county to another, which presents a significant barrier for tracking moves to/from rural counties. Nonetheless, our analyses provide a general sense of the types of counties gaining and losing households across regions and across the rural–urban continuum, albeit not the specific origin/destination counties.

We analyze migration across the rural–urban continuum using multiple migration measures, including inflows, outflows, net migrants, net migration rates, and the migration efficiency index. We calculate these measures from using the IRS data as follows:

Net Migrants = inflow - outflow.

Net Migration Rate (NMR) = (inflow - outflow)/(non - movers + outflow).

Migration Efficiency Index =  $(inflow - outflow/inflow + outflow) \times 100$ .

Migration efficiency accounts for inflows' advantage over outflows, in proportion to all migration originating and terminating in the county. Like net migration rates, migration efficiency can be positive or negative, depending on weather inflows outnumber outflows. High positive values reflect net migration gains amidst proportionate levels of local mobility, whereas low positive values reflect net migration gains amidst disproportionate levels of local mobility, for example when small net gains occur under conditions of high population turnover. Conversely, large negative values reflect net losses in conditions of proportionate migration, such as when small net losses coincide with low turnover. In concert, these migration measures are useful in accounting for relative differences in size across counties and for drawing contrasts between high migration volumes and high rates of growth or change.

#### Classifying Counties along the Rural–Urban Gradient (RUG)

We introduce a new classification scheme that can effectively distinguish metropolitan central city core counties from their suburban and exurban surroundings while holding metropolitan classification constant. We call this classification the Rural–Urban Gradient (RUG). Eight RUG classes, numbered 0–7, are mapped in Fig. 1. RUG classification methods are detailed in "Appendix B".

Exurban counties are particularly important to understanding the rural–urban continuum and they are not captured in recent classification schemes. Conceptually, exurban classification should capture growth at metropolitan peripheries as well as commuting relationships between those peripheries and the urban core. Thus, the RUG defines as "Exurban" (RUG=4) as the 280 counties that the federal Office of Management and Budget (OMB) reclassified from non-metropolitan to metropolitan between 1990 and 2016 (time period under study) and that were adjacent to an existing metropolitan area in 1990<sup>2</sup>. Despite their official status as "metropolitan" by the end of the time period, we characterize *Exurbs* as "rural" in our analysis, and in some figures we group them with other metro-adjacent rural counties. This is because the population in these counties remains predominantly rural and housing density is low, despite substantial commuting behavior into more urban areas.

We follow Johnson and Winkler (2015) in separating large metropolitan core counties (RUG=0) from their suburbs (RUG=1). Our classification of the remaining county types follows Rural–Urban Continuum Codes (RUCC) published by the USDA Economic Research Service (2013), as outlined in "Appendix B". Table 1 illustrates how RUCC and RUG classifications compare.

#### Analysis

In presenting results, we summarize migration measures and related demographic and socioeconomic characteristics by county type along the Rural–Urban Gradient (RUG). We begin by comparing Exurbs to other classes across several migration, demographic, and economic indicators. We select metrics that indicate whether our

 $<sup>^2</sup>$  84 reclassified counties earned their metro designation from growth of an in situ city that exceeded 50,000, rather than from integration with an adjacent city. We therefore excluded those 84 counties from our "Exurb" category, leaving only those reclassified for adjacency.



Fig. 1 Map of Rural-Urban Gradient classes in the USA

RUCC-RUG Comparison:19	90–2016				
RUCC	Total net mig	ratio	on	RUG	No. W/Net loss (%)
		0	-9,638,770	Major Met Core	46 (73%)
Major Metropolitan	-3,516,528	1	5,748,608	Major Met Suburb	62 (23%)
Midsize Met	2,174,745	2	1,841,279	Midsize Met	101 (38%)
Small Met	1,036,984	3	467,622	Small Met	89 (42%)
Micropolitan, Met-adjacent	323,281	4	1,279,462	Exurb	76 (27%)
Micro, Non-adjacent	-110,769	5	860,330	Met-adjacent rural	465 (46%)
Small Town, Adjacent	403,145	6	- 110,769	Micropolitan	50 (60%)
Small Town, Non-adjacent	- 105,905	7	- 88,966	Remote rural	533 (64%)
All rural, Met-adjacent	133,955	8			
All rural, non-adjacent	16,939	9			

 Table 1
 RUCC-RUG net migration comparison

classification reflects distinctly exurban qualities or aligns with suburbs or other rural categories. Next, we present a series of tables and data visualizations that sort migration patterns into RUG classes with the intention of demonstrating how flows and net migration volumes covary over time along the RUG. We then compare non-metro-adjacent trends across the four census regions (Northeast, Midwest, South, West). Through these comparisons we show the extent to which American rural migration has been concentrated and confined temporally.

## Results

#### **Describing the Exurbs**

Counties identified as *Exurbs* closely resemble the exurban archetype of rural–urban hybridity (see Table 2). While now categorized by the OMB as metropolitan, these counties' populations are both small in average size and generally rural in character. *Exurban* counties are only slightly more densely settled than non-metropolitan counties, and they are similar to remote rural counties in the percent population living in "rural" areas, over 70%, according to the US Census' designation of rurality. Exurbs are also similar to non-metropolitan counties in that they are predominantly white and have a relatively old age structure.

Despite these decidedly rural traits, Exurbs' economic, housing, and commuting profiles reveal their close similarity to suburbs of large metro areas (Table 3). The housing stock is generally newer and more expensive than all rural categories. Nearly 10% of workers commute an hour or more to their jobs, second only to major metro suburbs. Exurbs' economic profiles fall between urban and rural extremes. Average median incomes are lower than those in larger metro areas and suburbs but greater than those in rural counties. Average poverty rates are lower than in more rural areas, but approximately 50% higher than suburbs. Together, the findings suggest that Exurbs face distinct challenges that differentiate them from both suburban and rural counties, including housing affordability (given relatively high and growing values coupled with high poverty), long commutes, and in meeting the service needs of a growing, aging population spread over a large territory in low density settlement patterns.

Aggregating millions of household moves made over 25-years, metropolitan counties (RUGs 0–3) netted a loss of more than 1.5 million domestic migrants. Rural counties as a whole (RUGs 4–7) experienced a cumulative net in-migration of about 1.9 million. However, differences across the rural–urban continuum within these two broad groups were stark (see Table 1). *Major Metro Core* counties experienced consistent domestic net out-migration, amounting to a total net loss of over 9.6 million migrants between 1990 and 2016, while their suburbs gained 5.7 million net migrants. The near opposite patterns between these two classes demonstrate the importance of separating the *Core* counties from their suburbs when classifying the RUG for understanding spatial migration patterns. These critical differences would be hidden by the RUCC (see Table 1). Mid-Sized Metros and Small Metros also grew due to net migrants (Homeland Security Immigration Yearbook 2016), who still most often settle in metropolitan areas (Massey and Capoferro 2008; Frey 2017).

	Population on 2010	% Pop change 1990–2010	Median Age 2016*	Chng Median age 2016	Median natural increase 2016	Pop density 2010 Pop/Sq	% Change Pop density	% White	% Pop rural 2010
Mjr Met Core	1,425,314	27.7	36.2	3.4	5380	5042.5	23.0	62.2	2.4
Mjr Met Sub	275,304	54.3	39.4	6.3	432	690.7	53.6	80.7	29.4
Midsize Met	225,626	33.0	38.5	5.5	304	330.4	33.0	81.1	28.4
Small Met	96,161	25.0	38.3	5.5	128	152.9	25.0	83.0	36.7
Exurb	36,820	27.7	41.8	7.4	1	66.7	27.7	84.3	72.3
Met-Adj rural	29,349	13.2	41.7	6.9	6 -	50.1	13.2	84.0	67.4
Micropolitan	52,806	17.3	37.4	4.9	121	64.1	17.3	82.9	34.7
Remote rural	12,691	3.5	43.2	7.2	- 5	21.0	3.5	87.6	77.6
Values presented	d are group means, unles	ss otherwise indic	ated. (*Media	(u					
Source US Cens	sus, American Communi	ty Survey							

Table 2 Demographic profile of RUG classes

RUG classes demography

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grat	Rural Mig
	Rural Migra

	% Poverty 2016	Change % poverty 1993–2016	Median income 2106*	Change Mdn Inc 1993–2016	Median home value 2016*	% Chng Mdn Val 1990–2016	% Homes built since 1990	% With com- mute > 1 h
Mjr Met Core	15.5	- 1.7	\$56,147	81.3	\$200,750	136.5	26	8.3
Mjr Met Sub	10.2	- 0.3	\$67,174	80.7	\$192,750	142.4	41	11.2
Midsize Met	14.4	- 0.1	\$52,621	71.7	\$149,300	137.4	37	5.6
Small Met	15.3	- 0.4	\$48,538	73.1	\$137,600	152.0	34	5.5
Exurb	15.2	- 1.2	\$48,939	84.4	\$120,600	168.3	37	9.8
Met-Adj rural	17.3	-0.5	\$44,378	78.3	\$101,200	152.8	30	8.7
Micropolitan	16.6	- 0.6	\$46,595	74.1	\$116,400	159.7	30	4.7
Remote rural	16.9	- 0.7	\$44,291	83.2	\$90,900	180.8	26	6.3
Values presented	1 are group means, unle	ess otherwise indicated	i. (*Median)					
Source US Cens	us, SAIPE, American (	Community Survey						

Rural counties similarly differed according to where they fall along the RUG. RUGs 4 & 5 netted a gain of more than 2.1 million migrants, of which nearly 60% (1.27 million) were in Exurbs (RUG 4). Rural counties not adjacent to a metro area (Micropolitan and Remote Rural) lost nearly 200,000 net migrants. This means that between 1990 and 2016, counties bordering metropolitan areas (Exurbs and Met-Adjacent combined) accounted for almost all (96.5%) rural net migrants. Exurban counties alone accounted for nearly 66% of the cumulative net migration gains experienced in Rural America.

Rural net migration losses were widespread and more common than metro losses, as revealed by the proportion of counties in each RUG that experienced cumulative net loss between 1990 and 2016. A majority (62%) of non-met adjacent rural counties (RUGs 6 & 7) experienced cumulative net migration losses. Only around one third of urban counties (RUGs 0, 2 & 3) saw net loss, and metro loss was particularly concentrated in Major Metro Core counties (RUG 0). Less than 30% of Major Metro Suburbs and Exurbs (RUGs 1 & 4) experienced net losses.

## Temporal and Regional Patterns—Exurbs Show Consistent Appeal, Highest in the South and West

Figure 2 shows average net migration rates across the RUG. Prior to the Great Recession (2007–2009), variation among RUG classes was wider, clearly visible in Fig. 2. The Great Recession is known to have slowed migration, "freezing" many people in place such that counties who had been net gainers saw a drop in net migration while counties that had been net losers saw an increase—or less loss (Johnson et al. 2017). Findings here confirm that pattern, as we see a narrowing of differences during the 2007–2012 period, followed by renewed divergence as earlier patterns start to resume after 2012.

Figure 2 also illustrates the high appeal of Suburbs and Exurbs throughout the study period, even during the Great Recession's slowdown. Suburbs saw aggregate net migration gains in every year under consideration, and Exurbs saw gains in all years but two. Major Metro Core counties, on the other hand, saw considerable and consistent net out-migration. Remote and Micropolitan counties also stand out for sub-zero rates for most of the period, with the exception of the early 1990s.

Figure 3 shows the cumulative net migration (left axis) and mean migration efficiency index (right axis) across census regions for rural RUG classes (4–7, grouping Exurbs and Metro-Adjacent, and Micropolitan and Remote Rural). In all regions, Exurbs and Metro-Adjacent classes experienced the most positive and efficient migration streams. Both Micropolitan and Remote Rural counties generally experienced efficient net out-migration across regions, except for in the West. As expected, the South and West saw general net in-migration across the RUG, while the Midwest and Northeast saw general net out-migration. The Northeast's large, negative efficiency in Micropolitan counties occurred with very small net migration losses suggesting that turnover was also low. In other words, Northeastern Micropolitan counties netted a small loss in the number of migrants, but this stream was highly efficient in that these counties attracted very few in-migrants.



Fig. 2 Net migration rates per thousand for RUG classes, 1990–2016. Gray areas indicate confirmed periods of economic recession



Comparing Cummulative Net Migration with Mean Migration Efficiency: RUGs 4-7, 1990-2016





Fig. 4 Net migration for RUGs 4 & 5, and 6 & 7, over five time periods

Exurban and Metro-Adjacent counties in the South show the opposite pattern. Net migration was positive, while the efficiency index was low, the result of in-migration coupled with high turnover. In other words, a relatively large degree of concurrent in and out-migration occurred in these counties, but the out-migration was more than made up for by in-migration. Efficiency is higher in southern Exurban counties than in Metro-Adjacents, suggesting they were better at both attracting and retaining residents. Still in comparison to other regions and classes, Exurban and Metro-Adjacent counties in the South and West experienced particularly positive and efficient migration streams. In the West, disproportionately high efficiency relative to migration gains in Exurbs and Met-Adjacent rural counties suggest that those gains came as the result of proportionately low amounts of turnover, indicating that counties along the periphery of Western cities were superior to the South at both attracting and retaining non-movers and migrants, despite netting fewer of them. Southern Micropolitan and Remote Rural counties experienced cumulative loss. Western Remote counties saw small net migration gains that contrast with average negative efficiency, indicating losses were widespread across a large number of counties but large gains in a small number of places counterbalanced those losses.

Figure 4 shows how net migration varies across the RUG in five key time periods and across regions. It shows that net migration gains of the 1990s, long associated in the literature with a general *Rural Rebound*, were more accurately observed in a few specific years and places, as noted by Johnson and Cromartie (2006). Rural migration gains peaked between 1992 and 1995, when all rural categories saw positive net migration, on average. Outside of those years, average gains were limited to Exurbs and Metro-Adjacent counties. Metro-Adjacent and Exurban counties together accounted for around 85% of gains in the window spanning 1990–1995 and around 96% of net migration gains in the 1990s as a whole. In sum, the rural rebound of the 1990s was longer and far more substantial for rural counties close to metropolitan areas than for Micropolitan and Remote Rural counties. Micropolitan counties experienced net losses in the 1990s on aggregate, and the average gains in Remote Rural counties account for only 4% of total non-metro gains. On aggregate, rural net

migration nationally has trended downward since 2000, and the increases that have occurred have overwhelmingly accrued to Exurban and Metro-Adjacent counties.

The rural rebound of the 1990s was also highly concentrated in space. Together, the South and West accounted for nearly 79% of rural net migration gains in the 1990s, with the South alone accounting for nearly 53%. Our findings show that 51% of total rural gains for the decade can be attributed solely to Met-Adjacent and Exurban Counties in the South (RUGs 4&5). Only the West saw aggregate Micropolitan gains in the 1990s. However, those gains were confined to the first half of the decade. All four regions logged aggregate micropolitan losses in the second part of the decade.

The advantage of proximity to major urban centers continued in the 2000s but fell off during the Great Recession, when far fewer people moved. Rural migration between 2000 and 2010 was even more concentrated regionally than in the 1990s. Together, the South and West account for nearly 88% of rural net migration gains. The South alone accounted for over 61% of total rural gains, all attributed to Exurbs and Met-Adjacent counties (RUGs 4&5), as Micropolitan and Remote Rural counties in the West were the only in the four census regions to record positive net migration figures on aggregate, suggesting proximity to a city grew in importance from the previous decade for the majority of rural counties.

The 2000s were marked by two catastrophic economic and social shocks: The September 11 terrorist attacks of 2001, which resulted in a short recession, and the protracted "Great Recession" precipitated by the collapse of the housing, lending, and finance industries. Figure 2 shows that after 2001, net migration further declined in major metro cities and suburbs but increased or stabilized for all other (more rural) classes. The opposite was true of the Great Recession, which was characterized by a pronounced slowdown in household moves writ large, a greater proportion of moves toward cities and fewer moves to rural America. Referring again to Fig. 4, in the Northeast and Midwest, Exurban counties experienced migration gains in the first part of the decade but losses during the recession. By contrast, net migration gains in Exurbs and Met-Adjacents in the South and West dropped by around 50%, but did not reverse. In fact, these counties gained over 285,000 migrants during the recession years, whereas the Northeast and Midwest counties in those RUG classes netted a loss of over 90,000. The West's Remote Rural counties were the only of the two more remote RUG classes to show aggregate gains during the recession in any region of the US, which may possibly be attributed to the expansion of the shale oil industry.

Since 2010, rural America has seen even more widespread net losses (Fig. 4). Between 2011 and 2016, Exurb counties (RUG 4) netted around 185,000 domestic migrants, hardly keeping pace with previous decades. RUGs 5–7 netted an aggregate loss of similar magnitude, 178,598. This includes a net loss of over 90,000 from Metro-Adjacent (RUG 5) rural counties. Exurbs in the South continued to account for a wide majority of all rural gains. They were the only rural RUG class outside the West to log aggregate gains and their gains were much lower than in years prior to the recession. In the Midwest and Northeast, even Exurb and Met-Adjacent counties experienced net migration losses during the recession and in the years since.

## Discussion

In this paper we introduce the RUG classification, which separates major metropolitan core counties from their suburbs and exurbs and holds metropolitan classification constant between 1990 and 2016. We show that exurban counties are distinct according to their demographic and socioeconomic characteristics, suggesting their rural–urban hybridity. They are some of the most rural counties in terms of population density and settlement patterns, yet their economic, commuting, and housing characteristics more closely resemble those of major metropolitan suburbs. We then use the RUG classification to describe annual migration patterns across regions, and to show how critical it is to separate Major Metropolitan Core counties (which have consistently experienced net out-migration in recent decades) from their Suburbs and Exurbs (which have seen dramatic net gains due to migration in recent decades) to understand spatial migration patterns.

Our analysis builds upon previous studies showing that domestic migration, on aggregate, moves people away from large cities and remote rural areas toward the suburbs and exurbs (Fuguitt et al. 1998; Morril 1992; Johnson and Winkler 2015). We call attention to the fact that over 25 years, rather than implicating deconcentration, these migration trends exemplify a particularly sprawling pattern of urbanization, unfurling with particular speed in the American South and to a lesser extent, in the American West. Further, preliminary analyses beyond the purview of this paper indicate that a wide majority of in-migration to rural recreation and retirement counties occurred in Exurban and Metro-adjacent RUGs, underscoring that urban proximity matters even in migration contexts associated with lifestyles.

Taken in sum, these findings illustrate that American households relocating to rural places have steadily gravitated toward a more exurban rural experience, undercutting the dimension of remoteness often associated with the term "rural". Exurban counties, which despite being classified as metropolitan by the federal OMB are still largely rural, attracted in-migrants most consistently and in the highest numbers. Their popularity as qualitatively rural places can be easily overlooked on account of their metropolitan status, but it is essential for understanding the degree to which rural movers are selecting urban adjacency, as Gottlieb (2006) contends.

Our findings, like others, underscore the importance of regional context (Frey 2002). Rural counties anchored to metropolitan areas in the South and West account for 87% of rural domestic net migration gains throughout the study period's changing economic conditions. This reaffirms that the pull of the Sunbelt cities has also been decidedly exurban. Further, notable differences underscore contrasts between the South and the West. In particular, our findings show the extent to which the South's exurban growth was a phenomenon of national significance, given that more than a third of all rural net migration gains occurred in the South's comparatively high turnover reflected in migration efficiency points to dimensions of underlying difference with the West, where efficiency was greater.

These distinctions are worthy of closer-scale examination of potential explanations, for example policies that reduce barriers for newcomers (Schleicher 2017), and the impacts of newcomers on land use and future development (Linkous 2019).

Finally, 25 years of continuous metro-adjacent migration gains in an otherwise depopulating rural landscape has implications for researchers and development practitioners alike. Within counties, our profile of exurbanization reveals how migration gains can intensify inequality and its associated hardships, even in places lucky enough to attract newcomers. This echoes the work of countless others on rural gentrification (Salamon 2007; Hammer and Winkler 2006; Golding 2014). Rural places often suffer from housing shortages to begin with (Dolbeare 1999). When property values escalate faster than wages, as they do when urban salaries flood rural housing markets, local residents are left with fewer housing options (Ziebarth 2011). The finding that exurbs' relatively high poverty rates have persisted amidst new home construction and sizable increases in home values and incomes indicates potential for serious housing affordability problems.

These findings speak to complex place diversity taking root in rural and urban America as a result of migration. As research has argued, popular rural destinations show increasing similarities to cities, and several cities have taken on rural attributes after periods of population decline. Meanwhile, suburban forms proliferate further outward into exurban places. These trends have triggered lively debate regarding the merits of maintaining traditional rural and urban definitions (Frey 2004; Woods 2009; Lichter and Brown 2011). The trend toward primarily exurban rural growth is noteworthy because it offers evidence for both sides of that debate. On one hand, widespread exurban growth embodies new dimensions of urban-rural connectivity and paradoxical built and social environments. But on the other hand, the concentration of most rural growth along metropolitan peripheries implicates widening inequalities leaving remote places farther behind. The majority of rural Americans may enjoy new degrees of connectivity and integration, but the majority of rural American counties remain traditionally rural by virtue of their density, location, and economies, because urbanization does not unfold uniformly across space. Notably, most micropolitan countieshome to quintessential "small town" America, have experienced migration losses throughout periods usually characterized as positive for rural places, including the 1990s' rural "rebound".

These demographic realities have far-reaching implications for politics and government. Since the 2016 elections, rural communities and household migration have received resurgent attention from the popular media (Eg. Kurtzleben 2016; Whitaker 2016; Griffin et al. 2018). Storylines highlight rural–urban socioeconomic disparities as well as the implications of urban voters crossing into new regions. Like others, our work shows that growth in the South and West continues to come at the expense of the Northeast and Midwest, which impacts congressional reapportionment (Frey 2005). Moreover, the concentrated exurbanization we have described has direct implications for legislative bodies, wherein remote rural communities constituting a shrinking share of the population wield disproportionate representation.

For a decade or more, migration data has pointed to a slowdown of inter-county migration, irrespective of the pronounced drop during the recession (Kaplan and Wohl 2017)<sup>3</sup>. Recent low net migration in non-metro counties portends a continuing national slowdown in rural migration. Looking to the future, demographic and economic changes to the US population structure signal tenuous long-term prospects. While retirement migration has persisted steadily in the recent past, lower retirement migration among late baby boom cohorts has long been predicted (Haas and Serow 2002) because those cohorts hold different pension assets and many will receive lower demand for their homes from the smaller cohorts behind them in the life course. Thus, future retirees may not have the wealth to move at the same rates as previous cohorts. Widening wealth inequality across generations presents another demographic variable for consideration. With relatively privileged early baby boom cohorts well into their retirements and homeowners still underwater from pre-recession home purchases, moving is less affordable than for previous generations. In sum, detailed focus on the demographic drivers of migration will be important for forecasts because relocation decisions relate to households' position in life course and relative wealth, which are undergoing rapid change.

Under these conditions, now compounded by Covid-19 and its economic fallout, the future of age-specific migration patterns that have historically propped-up remote recreation destinations is even more uncertain. Elderly populations of the future may be less inclined to stray far from urban medical care, but more compelled to escape high density living. This would seem to compound the popularity of exurbs, which in 2016 were at the cusp of natural decrease, signaling only a marginal advantage in sustaining growth from fertility. Fertility declines underscore the growing importance of migration for rural America, but are ultimately the reason that the long-term demographic benefits of retirement migration are short lived.

## Conclusion

Throughout time and across counties, the preference for urban adjacency has been consistent. Data show that suburbanization, exurbanization, and the growth of small and midsized cities—coupled with rural out-migration, have persisted despite periodic fluctuations. This process concentrated people closer to urban centers. These larger patterns in which rural migration gains occur mean that most rural counties now experience persistent population loss, faster than average aging, and contracting labor forces.

Rather than understanding the diversity of rural problems as a palette of many unrelated colors, we see in them the common hues of urbanization, which entails distinct but interrelated systems of suburbanization and exurbanization carried out

<sup>&</sup>lt;sup>3</sup> A sharp increase in migration in 2012 is due to the change in how the IRS counted migrants, discussed above. It should be interpreted with caution, as should a sudden drop in migration in 2015.

by different groups of movers. Our analyses redirect focus from how specific rural counties grow in relatively short spurts, to the broader and more persistent patterns by which rural America exchanges population with urban and suburban America. We argue that centering urbanization elucidates extreme spatial and temporal inconsistency in migration and should call attention to the severity of conditions experienced by remote rural places, the vast majority of which are losing population to out-migration, as they experience greater social and economic marginalization.

## **Appendix A**

#### **IRS Migration Data: Limitations and Implications**

The IRS cannot record moves by households that do not file tax returns, which means the data likely exclude some low-income families and university students (Gross n.d). While approximately 87% of household heads file tax returns (Molloy et al. 2011), workers in occupations characterized by under-the-table or informal work likely do not, which may also undercount moves within rural areas where informal economies are prevalent (Jensen et al. 1995; Slack 2007), and omit moves made by undocumented workers, which undercounts a high percentage of moves made toward and away from counties that house agriculture and processing facilities. International migration estimates are available in the data, but differences in tax filing and collection methodologies make it less reliable, and therefore we exclude foreign migrants from our analyses. This results in an undercount of migration, especially apparent in net migration losses recorded in major cities, known to be the country's primary immigration "gateways" (Massey and Capofero 2008; Lichter and Johson 2009). The focus here is on domestic migration.

The methods used to create IRS migration data have varied somewhat over the 25-year time period considered here. Most importantly, there were methodological changes (improvements) in calendar years 2011–2012 that suddenly increased the number of moves (Pierce 2015). This change entailed extending the window of data gathering to include households that had initially filed extensions instead of tax returns, which allowed for the inclusion of more returns from high-income earners. This could mean that counties appealing to high-income migrants show a net migration undercount prior to 2011. The impact was especially great in several states with large rural populations, including Wyoming, South Dakota, Louisiana, and Mississippi.

The IRS instituted a second methodological change in filing year 2015, which decreased migration estimates inexplicably. This impact has been observed by several data users. However, apparent aberrations resulting from the 2015 change have not been well explained in data notes or documentation. 2015 stands out in our analyses as strikingly off-trend with other years, meaning that data for 2015 should be interpreted with caution. In our figures assessing change over time, we present only data preceding 2012. We incorporate later years only in aggregation and for comparing across counties. Readers should keep this and other limitations in mind when interpreting results.

We noted that IRS methodology appears ill-suited for counties with large university student populations in relation to total residents. Around a dozen rural counties show disproportionately high outflows with no corresponding inflows. We remove counties from our analyses in which student enrollment is greater than five percent of total population.

Additional commentary on IRS migration data and associated methodological considerations can be found here:

- https://medium.com/migration-issues/what-happened-to-migration-in-2015-541f8ec95f08.
- https://perc.tamu.edu/perc/media/perc/mapnotes/migration\_notes\_links.pdf.

## Appendix B

#### Specifying Rural–Urban Gradient (RUG) Classes

The RUG Classification scheme sorts counties into the following eight categories: (0) large metropolitan core; (1) Suburban; (2) Mid-sized Metro; (3) Small Metro; (4) Exurban; (5) Metro-Adjacent Rural; (6) Micropolitan; and (7) Remote Rural.

*Exurbs* are identified by selecting specific counties from counties reclassified from "Rural" to "Metropolitan" by the US Office of Management and Budget (OMB). Following each census, the OMB defines metropolitan statistical areas and the counties that fall within them, according to the principle that they "contain[ing] a large population nucleus and adjacent communities that have a high degree of integration with that nucleus" (OMB 2010, p. 37,246). They determine that counties are "integrated" if at least 25% of workers in either county commute between them (ibid). Following this logic, exurban counties should be "metropolitan" by the end of the time frame under examination, since they are integrated with the urban core. We think reclassified counties adjacent to existing metro areas capture the idea of exurbanization, because these counties lay at the outskirts of metropolitan areas at the start of the study period but later saw sufficient increases in social and economic integration into the metro area to be considered "metropolitan" themselves. The average *Exurban* county had a population of about 36,689 people at Census 2010 with a total of 10.27 million Americans residing in the exurbs in 2010.

*Suburban* counties in large metro areas are home to a large number and proportion of Americans, but show distinct socioeconomic and cultural characteristics and migration patterns from their adjacent urban cores (Johnson and Winkler 2015).

Large Metro Core counties (n=63) are counties that include the major city (or twin cities) of large metropolitan areas containing more than one million people at Census 2000. These *Core* counties had 90.2 million residents in 2010 (ibid) and generally contain the central city and some of the older, inner suburbs. *Suburbs* are then defined as the remaining 271 (non-core) counties within large metropolitan areas of one million or more people (except for those counties already defined as exurban). 73.7 million Americans lived in *suburban* counties in 2010.

Our classification of the remaining county types derives from the Rural–Urban Continuum Codes (RUCC) published by the USDA Economic Research Service (2013). Table 3 illustrates how they compare.

*Mid-Sized Metros* are the 267 counties in metropolitan areas of 250,000 to one million residents (RUCC=2) and were home to 60.8 million people in 2010.

*Small Metros* are the 212 counties in metropolitan areas of less than 250,000 people (RUCC=3) and were home to 20.2 million people in 2010.

*Metro-Adjacent Rural* counties are the 967 non-metropolitan counties that are adjacent to metropolitan areas (RUCC = 4/6/8). About 28.4 million Americans lived in *Metro-Adjacent Rural* counties in 2010.

*Micropolitan* counties are non-metropolitan counties not adjacent to a metropolitan area but that have a city of at least 20,000 people (RUCC=5). In other words, *Micropolitan* counties, as defined here are counties with isolated small cities. These 83 counties were home to about 4.5 million people in 2010.

*Remote Rural* counties (n=829) are those non-metropolitan counties that were not adjacent to a metropolitan area (remote) and that did not have any city of at least 20,000 people (RUCC=7/9). We group *Remote Rural* counties with *Micropolitan* counties when contrasting remoteness from metro-adjacency. They were home to approximately 10.3 million people in 2010.

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