

## Rural Depopulation: Growth and Decline Processes over the Past Century\*

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**ABSTRACT** This article highlights the rise and geographic spread of depopulation in rural America over the past century. “Depopulation” refers to chronic population losses that prevent counties from returning to an earlier period of peak population size. In this article, we identify 746 depopulating counties—mostly nonmetropolitan—representing 24 percent of all U.S. counties. More than 46 percent of remote rural counties are depopulating compared to 24 percent of the adjacent nonmetropolitan counties and just 6 percent of metropolitan counties. Rural county populations often peaked in size during the 1940s and 1950s, especially in the agricultural heartland. Depopulation today reflects a complex interplay of chronic net out-migration and natural decrease that is rooted in the past. Depopulation not only is a direct result of persistent out-migration but also reflects large second-order effects expressed in declining fertility and rising mortality (usually associated with population aging). Depopulation has become a signature demographic phenomenon in broad regions of rural America.

### Introduction

The U.S. nonmetropolitan population peaked in 1940 at 75 million people, representing 57 percent of the total population (Gibson 2010). At that time, the majority of people lived in small cities and towns or in the open country. The 1940s marked a clear inflection point in America’s evolving settlement system. Rapid urbanization and population concentration had already been under way for decades by the 1940s, though it did slow during the Great Depression. After World War II, the 1950 decennial census revealed, for the first time, that the majority of all

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Americans lived in metropolitan counties. Burgeoning metropolitan growth and the urbanization of American society have dominated the nation's population and economic trends ever since (Fuguitt 1985; National Advisory Commission on Rural Poverty 1967). Metropolitan growth has been fueled by natural increase, a substantial flow of rural-to-urban migrants, and new immigrants from abroad. Rural people and places have often been "left behind" in America's evolving urban settlement system (Lichter and Ziliak 2017; Wuthnow 2018).

Today, rural America is once again at an important demographic transition point. The Census Bureau's recent population estimates show that America's nonmetropolitan population stood at only 46.1 million in July 2016, representing a new low of only 14 percent of the entire U.S. population (Economic Research Service 2018). Many nonmetropolitan counties, especially in remote rural areas, have been marginalized in an increasingly urban settlement system marked by ongoing shifts away from farming and other extractive industries and by the ascendancy of a globalizing economy.<sup>1</sup> In the past, nonmetropolitan counties "left behind" by urban growth and sprawl still experienced modest population gains in the aggregate; net out-migration historically was more than offset by natural increase—the difference between births and deaths. Today, nonmetropolitan counties are experiencing absolute population decline for the first time in America's history. Between 2010 and 2016, nonmetropolitan counties declined by just over 190,000 people, representing a  $-0.4$  percentage loss (Cromartie 2017).<sup>2</sup> Population loss has seemingly become the new demographic norm across broad regions of rural America.

This article documents for the first time the genesis and evolution of rural depopulation over a long time horizon, from 1900 to 2016. For our purposes, "depopulation" refers to chronic population losses that prevent counties from returning to an earlier peak population. We define depopulation as occurring when a county reached its peak population by 1950 and then lost at least 25 percent of its peak population by 2010. Indeed, our data show that roughly one-third of all nonmetropolitan

<sup>1</sup>Historically, declines in the absolute size of the nonmetropolitan population were largely the result of the reclassification of nonmetropolitan counties as metropolitan. The continuing reclassification of many fast-growing nonmetropolitan counties to metropolitan status as they formed new metropolitan areas or were added to the periphery of existing metropolitan areas has had significant implications (Fuguitt, Heaton, and Lichter 1988). Between 1983 and 2013, a total of 447 nonmetropolitan counties were redefined as metropolitan.

<sup>2</sup>Recent Census Bureau estimates suggest that between July 2016 and July 2017, the population of nonmetropolitan counties increased for the first time since 2010. However, nonmetropolitan counties still registered an overall population loss from 2010 to 2017 (Johnson 2018).

counties have depopulated over the past century. We have three specific goals in this article. First, we highlight the emergence of depopulation as a demographic phenomenon in rural America, and trace its origins back to 1900. Second, we document the historically uneven spatial distribution and heterogeneity of population growth and decline processes across nonmetropolitan America. Third, we illustrate how chronic rural depopulation reflects a complex interplay historically of net migration and natural increase (or decrease). For an increasing number of nonmetropolitan counties, net out-migration and natural decrease—now working in concert—have exacerbated the interdecadal pace of absolute population decline. As we document here, depopulation is unprecedented in geographic scope and magnitude.

Our analyses of rural depopulation highlights the extraordinary demographic and economic challenges now facing many nonmetropolitan areas of the United States. Our work is of particular relevance now when rural America has taken center stage politically (as a result of the 2016 presidential election) and has become linked in the public mind to the new “geography of despair,” which is marked by declining life expectancy, opioid and drug abuse, and chronic poverty and unemployment (Lichter and Ziliak 2017; Monnat and Brown 2017; Wuthnow 2018).

### **Rural Depopulation: Some Lessons on Growth and Decline Processes**

Chronic population decline or depopulation has become a familiar pattern of population change in many low-fertility countries around the developed world (Münz 2006; Nikitina 2000). Rural areas have “emptied out” as urbanization has continued apace throughout much of Europe and many east Asian countries. Long-term industrial restructuring—away from agriculture and other extractive sectors—and the recent globalization of manufacturing are inextricably linked to the emergence and spatial diffusion of uneven long-term trajectories of subregional growth and decline. The transformation of agricultural production over the past century clearly set into motion a series of long-term demographic processes that have culminated in rural depopulation across much of the developed world. From an economic perspective, uneven population growth and decline over time arguably reflect processes of cumulative causation, whereby rapid and unprecedented economic and technological change has demographic consequences that reverberate unevenly throughout the entire settlement system, often at the expense of rural or underdeveloped periphery areas (Myrdal 1957; National Academy of Sciences 1986). Rural depopulation or the chronic loss of population is a cumulative demographic process that can be traced

historically to specific components of demographic change: migration, fertility, and mortality.

The concept of depopulation suggests a withering away of small town and rural areas. Unlike in Europe, most U.S.-based research has failed to address the topic of depopulation, invariably focusing separately on chronic patterns of rural net out-migration (Johnson and Fuguitt 2000) and, more recently, on newly emerging patterns of natural decrease (Johnson 2011; Johnson and Lichter 2016). However, regional research examining linkages between rural population change and community banking has begun to explore how demographic forces are reshaping rural communities (Anderlik and Cofer 2014; Walser and Anderlik 2004).<sup>3</sup> Though U.S. research on depopulation is limited, recent research in Europe and other developed countries, especially in east Asia, provides some rather clear demographic lessons about the etiology of depopulation, that is, how migration, fertility, and mortality work in concert to effect depopulation and diminish prospects for future growth (Münz 2006; Nikitina 2000).

In a recent article, Johnson, Field, and Poston (2015) suggest that low fertility in Europe, coupled with the high mortality of an aging population, has raised the prospect of sustained and widespread depopulation. They place the spotlight on natural decrease. Fewer births and more deaths across Europe, combined with comparatively low rates of international migration, mean that local or regional growth is driven almost entirely by internal migration. By historical standards, natural increase in the United States today is very low (0.44 percent), but it still exceeds the rate of natural increase in all but four European countries (Johnson et al. 2015). Germany, Italy, Poland, Russia, and Japan are now experiencing natural decrease—more deaths than births (Doteuchi 2006; Haub and Kaneda 2014; Münz 2006; Nikitina 2000). South Korea will soon join this group of countries (Heo and Poston 2018).

These country-specific patterns, however, mask the fact that depopulation today is distributed unevenly—at the subnational level—and experienced most acutely in rural areas (especially in remote areas far removed from metropolitan population and employment centers), reflecting decades-long patterns of aging in place; below-replacement fertility; and little, if any, immigration. In the context of low immigration, natural decrease rather than out-migration is largely driving population decline in Europe and Asia (especially in Russia and Japan). In the United States,

<sup>3</sup>FDIC researchers use the term “depopulation” in their regional research on population change and community banking (Anderlik and Cofer 2014; Walser and Anderlik 2004). Though their definition of depopulation and the longitudinal scope of their work differ from ours, their findings are consistent with those we report here.

the overall incidence of natural decrease has increased rapidly (Johnson 2011), but nevertheless remains much lower than in Europe (e.g., 28 percent of U.S. counties vis-à-vis 58 percent of European counties experienced natural decrease between 2000 and 2010) (Johnson et al. 2015).

Out-migration has characterized much of nonmetropolitan America over the past century, especially in counties dependent on agriculture, mining, and forestry. Recently, however, nonmetropolitan counties in the aggregate have experienced net out-migration (Mayer, Malin, and Olson-Hazboun 2018; McGranahan, Cromartie, and Wojan 2010). Between 2010 and 2016, for example, 462,000 more people left rural areas than moved in and the majority of nonmetropolitan counties experienced net out-migration (Cromartie 2017). Moreover, both immigration from Mexico and Latin America and Hispanic fertility have slowed significantly since the recession of 2008–2009, reducing another historically significant source of rural population growth (Lichter 2012).

Unlike in the past, natural increase seemingly can no longer fully offset population losses from net out-migration in many rural counties. The result is a growing incidence of natural decrease, marked by the excess of deaths over births. Fifty years ago, Calvin Beale (1969) first identified natural decrease as an important dimension—an “emergent phenomenon”—of rural population decline. More recently, Johnson (2011) revisited this issue, showing that a record number of U.S. counties (nearly 1,000) in 2002, mostly nonmetropolitan (over 90 percent), experienced an excess of deaths over births. Moreover, the majority of all nonmetropolitan counties (63 percent) experienced at least one year of natural decrease between 1950 and 2005. Recent evidence suggests even more widespread natural decrease. In 2012, the number of natural-decrease counties reached a new high—1,135 or 36 percent of all counties (Johnson 2018). As never before, rural natural decrease is presumably now working in concert with chronic net out-migration to exacerbate the loss of population in many nonmetropolitan counties.

Depopulation has become a demographic reality for many parts of nonmetropolitan America, and the prospect of depopulation is on the horizon for many more aging rural areas. The substantive implications are clear: To fully understand rural population dynamics today requires an appreciation of the historical interplay between net migration and natural increase. Protracted rural population losses are symptomatic of fundamental changes in the local population structure, especially low fertility and population aging, which ultimately reduce the prospect of population growth. Out-migration is highly selective of young adults, leaving behind an aging-in-place older population that is increasingly unable to replace itself (Johnson and Winkler 2015). This combination

of high mortality and low fertility is now firmly built into the age distribution of many declining rural places. The selective out-migration of young adults over many decades has drained many nonmetropolitan counties of their demographic resilience by reducing the child-bearing age population, thereby diminishing the prospect of regaining demographic equilibrium.<sup>4</sup>

### **The Demographic Drivers of Depopulation**

Depopulation provides an unusually clear indicator of the lack of demographic vitality, now and in the future. As we illustrate here, the prevalence, timing, and magnitude of depopulation in America have unfolded unevenly across the geographic landscape. As a harbinger of incipient population decline in a low-fertility aging society, our study of rural depopulation sensitizes us to the complex interplay among the underlying demographic components of population change. Migration—both internal and international—and natural increase play out unevenly across the United States, with many rural areas arguably now serving as portent of things to come (Johnson and Lichter 2016). In the absence of new immigration, rural areas will remain on the front line of unprecedented population change, especially as natural decrease takes a demographic grip on many local areas with aging-in-place populations that have been depleted over the past century by chronic out-migration of young adults of reproductive age. The demographic lesson is clear: Depopulation has accelerated over time across an increasingly broad swath of rural America.

### **Methodology**

#### **Data**

We use counties as the unit of analysis. Counties are appropriate because they have historically stable boundaries and they are a basic unit for reporting fertility, mortality, and census data. There are 3,141 counties or county equivalents in the United States. Because of difficulties with

<sup>4</sup>The patterns identified in rural areas are hardly unique, but often go unrecognized in other spatial contexts now being transformed demographically by migration flows, below-replacement fertility, and growing population diversity. In metropolitan areas, for example, declines in population size in many of America's older principal industrial cities have usually placed the spotlight on residential mobility, suburbanization, and "white flight." Natural decrease is typically ignored. For example, one recent study found that metropolitan neighborhoods are changing in response to the complex interplay between geographic mobility and in situ change that alters the demographic composition over time from population aging as well as residential mobility (Huang, South, and Spring 2017).

boundary changes and historical data in Alaska and Hawaii, we limit our analysis to the continental United States.

Counties are classified by metropolitan status using data from the U.S. Office of Management and Budget. We use a consistent 2013 definition of “metropolitan” and “nonmetropolitan” throughout our analyses. As a result, several hundred counties that would have been classified as nonmetropolitan under previous Office of Management and Budget definitions are included in the metropolitan universe reported here.<sup>5</sup> This highly selective reclassification process has, over the course of several decades, removed many fast-growing counties from the universe of nonmetropolitan counties and reclassified them as metropolitan. Nonmetropolitan counties are further disaggregated by whether they are adjacent or nonadjacent to metropolitan counties using the 2013 rural-urban continuum code and by the rural county typology developed by the USDA’s Economic Research Service (2017). We use the terms “nonmetropolitan” and “rural” interchangeably in this article, as we do the terms “metropolitan” and “urban.”

County population data come from the decennial census for 1900 to 2010. Historical data on births, deaths, and migration for 1950 to 2010 are from the integrated age-specific net migration files developed by multiple teams of demographers over the past 60 years (Winkler et al. 2013). Demographic data from 2010 to 2016 are from the Census Bureau Population Estimates Series. Estimates of net migration are derived by the residual method, whereby net migration is what is left when natural increase (births minus deaths) is subtracted from the total population change.

## Measurement

There is no consensus on what constitutes depopulation. At a minimum, however, it reflects an absolute population decline of significant size over an extended period rather than an episodic or occasional decline. Our analysis of depopulation extends back to 1900, providing us with a long time frame to characterize specific countries as depopulating or not. For our purposes, county depopulation occurred if a county

<sup>5</sup>Our goal is to place the spotlight on depopulation among today’s rural areas, which have been “left behind” by the successive winnowing over time of growing counties from the universe of nonmetropolitan counties. To use a constant 1950 or 1960 nonmetropolitan definition would be very misleading, however, wrongly defining many of today’s growing metropolitan counties as nonmetropolitan, even though they are no longer “rural” based on morphology or function. Reclassification presents an unavoidable interpretative problem that is without a simple solution (Fuguitt et al. 1988). Our measurement approach—one using a fixed metropolitan definition of counties at the end of the time series—is conventional in the literature.

reached its maximum population by 1950 and had a population at least 25 percent below its peak population in 2010. The 1950 census is the first one following an era in which migration and fertility were constrained by the Great Depression and World War II. Dramatic demographic changes occurred in rural America after 1950, thus marking the boundary between two demographic eras. Although there is little consensus on what constitutes a significant loss of population, our preliminary analyses suggest that declines of 25 percent or more represent a substantial population loss with implications for the economic and social structure of counties.

Delineating the longitudinal pattern of depopulation is a unique aspect of our study. That is, does it occur in a linear or cumulative fashion? Does a county simply stop growing and start to decline? Or do counties lose population for a time, begin to grow again, and then fall back into decline? If so, which specific demographic components of population change—natural increase or migration—influence the process? Are some counties destined to decline, but then recover from it? If so, what causes the recovery? Given how little is known about depopulation, our study yields important new findings about the prevalence and dynamics of depopulation in both nonmetropolitan and metropolitan America.

## Findings

### Rural Depopulation Today and Linkages to the Past

How widespread is depopulation? In all, 746 counties representing 24 percent of the U.S. total are classified as depopulating counties. That is, they reached peak population by 1950 and lost at least 25 percent of that peak population by 2010. Depopulation has occurred in the context of a declining overall U.S. population growth rate over the past three decades. The slowdown in rural population growth has been unusually precipitous. Nonmetropolitan areas gained less than half as many people in 2000–2010 as they did in the 1990s. And for the first time in U.S. history, rural counties actually lost population in the aggregate between 2010 and 2016.

Depopulation is primarily a nonmetropolitan phenomenon. Population growth also slowed in metropolitan areas, but declines were far less precipitous and, unlike in nonmetropolitan counties, evidence of widespread depopulation was negligible. Population gains in metropolitan areas exceeded those in rural areas during each decade since 1990. As shown in Figure 1, metropolitan areas grew by 1.4 percent annually (22.2 million for the 10-year period) in the 1990s, by 1.08 percent annually from 2000 to 2010, and by .88 percent annually between 2010 and



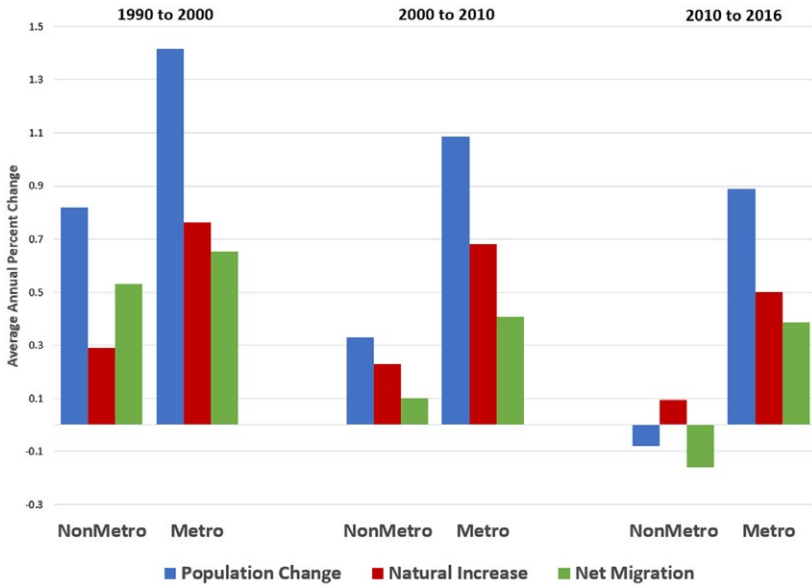


Figure 1. Demographic change by metropolitan status, 1990 to 2016. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

2016. In contrast, nonmetropolitan counties gained .82 percent (3.4 million people for the 10-year period) during 1990–2000, but these figures declined to a gain of .33 percent annually in 2000–2010 and to a loss of  $-.08$  percent annually between 2010 and 2016. Recent population losses are now widespread in nonmetropolitan America. Only 32 percent of all rural counties gained population between 2010 and 2016, compared to 67 percent of the metropolitan counties.

Depopulation is perhaps best understood when traced backward in time to find its demographic origin—its linkages to chronic out-migration and changing patterns of natural increase. The primary cause of the sharply curtailed rural population growth since 1990 was a slowdown in nonmetropolitan net in-migration. During the 1990s, net in-migration accounted for two-thirds of all rural population gain.<sup>6</sup> During 2000–2010, net migration accounted for less than one-half of the gain, followed by an absolute migration loss between 2010 and 2016. Because natural increase in rural areas diminished after 2010, this significant

<sup>6</sup>A significant part of nonmetropolitan net in-migration over the past two decades can be attributed to the foreign-born population, rather than just growth from metropolitan-origin migrants (Lichter and Johnson 2009).

reduction in net migration dramatically slowed and eventually reversed the rate of population increase. In metropolitan areas, net migration slowed after 1990, but there was sufficient natural increase to support continued urban population growth.

Population losses clearly have become the new demographic norm in a growing number of rural counties. Whether recent losses will continue or rebound in future growth remains unclear. What is clear is that the overall population loss in rural America is without historical precedent and is clearly gathering demographic momentum. However, population loss is hardly a new phenomenon in rural America. It has been observed in remote rural counties for decades. As Table 1 shows, population loss has been both protracted and widespread in rural America. Remarkably, 13 percent of all current nonmetropolitan counties had already reached their population peak by 1900, and another 36 percent did so between 1910 and 1950. This contrasts with metropolitan counties, where just 5 percent peaked in population by 1900 and another 8 percent by 1950. Thus, by 1950, nearly half of all current nonmetropolitan counties had reached their maximum population, compared to just 13 percent of metro counties. Another 16 percent of rural counties reached their population peak between 1960 and 2000, as did 12 percent of metropolitan counties.

These population losses historically have been most pronounced in counties that were not contiguous to currently defined metropolitan areas. In such remote nonmetropolitan counties, a striking 59 percent had reached their peak populations by 1950. However, though many

**Table 1. Historical Demographic Trends by Metropolitan Status.**

	Nonmetropolitan			Metropolitan	Total
	All	Not Adjacent	Adjacent		
Percent of peak population in 2010					
Less than 50%	17.4%	26.9%	8.9%	1.2%	11.4%
50% to 75%	19.0%	21.6%	16.8%	5.4%	14.0%
75% to 90%	14.6%	14.5%	14.6%	8.3%	12.2%
90% to 99%	14.4%	11.5%	17.1%	10.5%	13.0%
At peak	34.5%	25.5%	42.7%	74.6%	49.5%
	100.0%	100.0%	100.0%	100.0%	100.0%
Period of peak population					
1900 or before	13.4%	11.6%	15.0%	5.2%	10.3%
1910 to 1950	35.6%	47.5%	25.0%	8.4%	25.4%
1960 to 2000	16.4%	15.4%	17.3%	11.9%	14.7%
2010	34.5%	25.5%	42.7%	74.6%	49.5%
	100.0%	100.0%	100.0%	100.0%	100.0%
Number of counties	1,948	922	1,026	1,161	3,109

counties are now well past their population peaks, nearly half of all U.S. counties had larger populations in 2010 than in any previous decade. This includes just 35 percent of all nonmetropolitan counties compared to nearly 75 percent of all metropolitan counties. Unlike in rural counties, metropolitan population growth has been the historical norm that continues to the present day.<sup>7</sup>

Many nonmetropolitan counties that reached their population peak decades ago have experienced substantial population declines since then. For example, by 2010, more than 17 percent of all nonmetropolitan counties—including nearly 27 percent of remote rural counties—had lost over 50 percent of their peak populations. In contrast, just over 1 percent of metropolitan counties had experienced such staggering population losses. An additional 19 percent of rural counties—including 22 percent of the nonadjacent counties—had population losses of between 25 and 50 percent, compared to 5.4 percent of metropolitan counties. These figures highlight the growing metropolitan-nonmetropolitan disparities in population growth and decline processes over the past century of rapid urbanization.

Combining the percentage of peak population and period of peak population, we classify 746 counties representing 24 percent of the U.S. total as depopulating counties. These counties reached peak population by 1950 and lost at least 25 percent of that peak population by 2010. An additional 824 counties (26.5 percent) experienced population losses of less than 25 percent from peak or first experienced population loss after 1950. The remaining 1,539 counties (49.5 percent) were at their peak population in 2010.

As shown in Figure 2, depopulation is more prevalent in nonmetropolitan than in metropolitan counties, especially among those that are not adjacent to metropolitan areas. More than 46 percent of these remote rural counties are depopulating compared to 24 percent of the adjacent nonmetropolitan counties. In contrast, just 6 percent of metropolitan counties are depopulating. Because depopulation is so rare in urban counties, we focus exclusively on nonmetropolitan counties in the remainder of this article. The 676 depopulating rural counties represent 32 percent of all nonmetropolitan counties. We will examine the extent, geographic distribution, and demographic components of change (i.e., natural increase and net migration) underlying rural depopulation.

<sup>7</sup>Over the last century, intrametropolitan population change has been similarly dramatic, as central cities have hollowed out along with the continuing outward expansion of population and economic growth at the periphery.

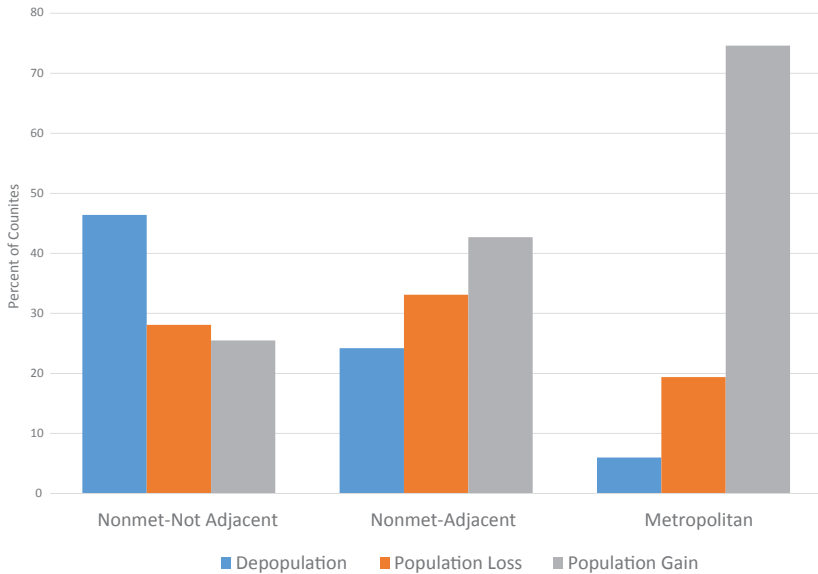


Figure 2. Depopulation status by metropolitan status. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

### Spatial Dimensions of Rural Depopulation

Depopulating counties are concentrated in the Great Plains in a north-south band from the Dakotas through Nebraska, Kansas, and Oklahoma to central Texas (see Figure 3). Clusters of depopulating rural counties are also observed in the northern Great Lakes, the interior of the Southeast, the Mississippi Delta, and the mining regions of West Virginia and Kentucky. In many cases, counties with less severe population losses are proximate to these depopulating counties, underscoring the spatial clustering of population loss in rural America. Other clusters of counties with significant population loss that are not yet depopulating are found in the northern industrial belt and in the Appalachians. In contrast, most rural counties at peak populations are located in the West, along the Atlantic or Pacific coast, or proximate to metropolitan counties. There are exceptions to this general pattern in high-amenity areas of the upper Great Lakes, northern New England, and the Ozarks and Great Smoky Mountains.

The uneven spatial distribution of depopulation reflects the historical linkages in the rural economy between employment declines in agriculture associated with the mechanization and consolidation of agricultural

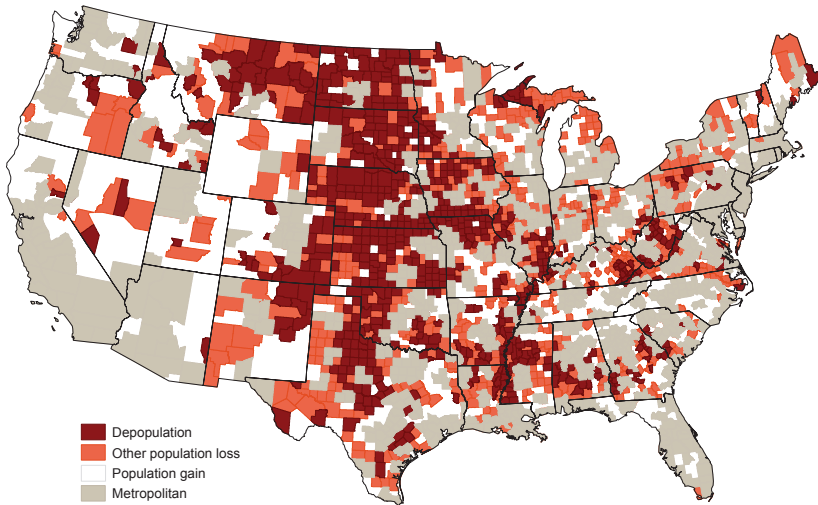


Figure 3. Depopulation in nonmetropolitan America. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

production, as well as the impact of globalization and automation on rural manufacturing (Anderlik and Cofer 2014; Walser and Anderlik 2004). Data in Figure 4 reveal that more than 80 percent of all rural farm counties today are depopulating. An additional 15 percent have had less severe population loss. In the face of increasing globalization and automation, most nonmetropolitan manufacturing counties also are now experiencing population loss, but only 19 percent are classified as depopulating. Another 39 percent have experienced less severe population loss, which may be a harbinger of future depopulation. In contrast, there is little evidence of significant depopulation in recreational and retirement counties. Just 15 percent of the recreational counties are depopulating, whereas 59 percent are currently at their population peaks. Even fewer (13 percent) of retirement destination counties are depopulating and nearly 74 percent of them were at peak population in 2010. Thus, while depopulation is widespread in some rural areas, it is far from universal.

### Depopulation and the Demographic Components of Change

Our analyses underscore the emergence and widespread geographic dispersion of depopulation in rural America. But little is known about the underlying demographic processes that give rise to uneven population growth and decline over an extraordinary period of fluctuating

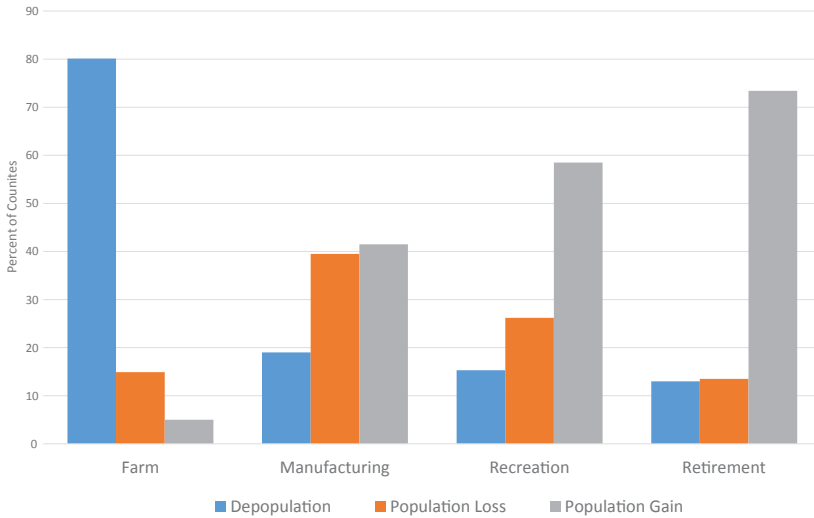


Figure 4. Depopulation status of nonmetropolitan counties by type. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

fertility (e.g., baby boom and baby bust), population aging, and rising mortality, as well as shifting patterns of migration. Does a county simply stop growing and start to decline, or is the process of depopulation more complex? Here we focus on the demographic components of change from 1950 to 2016 because nationwide county data on births, deaths, and migration prior to 1950 are extremely limited.

By definition, population decline after 1950 has been geographically widespread in depopulating counties—those that reached their population peaks in 1950 or earlier and have lost at least 25 percent of their peak population. Still, a substantial minority of historically depopulating counties experienced some modest population increases in the 1970s during the so-called nonmetropolitan population turnaround (Brown and Wardwell 1980; Fuguitt 1985). In that remarkable decade, 49 percent of the depopulation counties actually gained population. And 42 percent gained population during the rural rebound of the 1990s (Figure 5). Thus, even among counties with severe and protracted population losses historically, short-term population trends are sensitive to larger social and economic forces that are expressed demographically through shifting fertility, mortality, and migration at the local-area level. Decadal patterns of population change among counties with less severe population loss also reflect large population gains in the 1970s

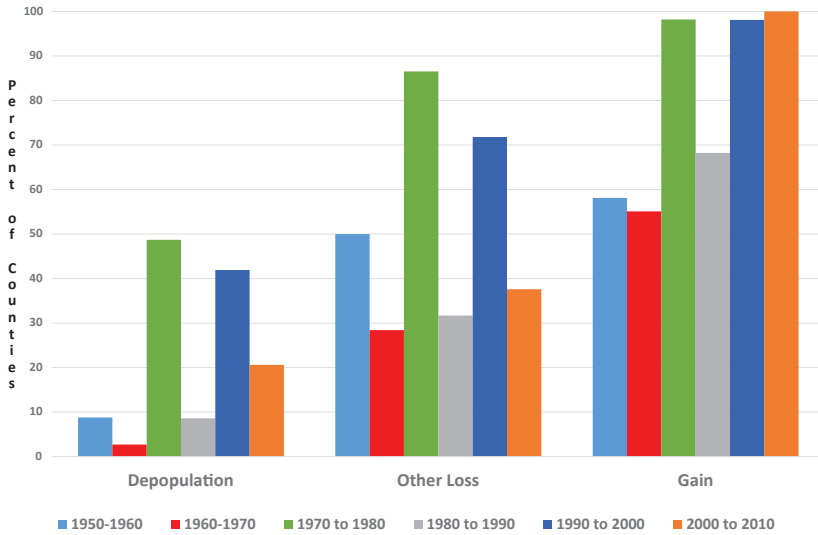


Figure 5. Percentage of nonmetropolitan counties with population gains by depopulation status, 1950 to 2010. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

and 1990s, whereas population gains were far more widespread in each decade in rural counties at their population peak in 2010.

Population loss from net out-migration is the single most important factor in the initial stages of depopulation. Many depopulating nonmetropolitan counties had already experienced decades of out-migration by the middle of the twentieth century. During the 1950s and 1960s, net out-migration from depopulating counties was nearly universal (Figure 6). The overall net migration loss from these counties was also substantial, a staggering 24 percent during the 1950s (data not shown). Net migration gains were more common in depopulating counties during the 1970s and 1990s, when migration fueled the nonmetropolitan population turnaround and rural rebound. Yet even in these exceptional decades, the majority of depopulating counties still lost more migrants than they gained. Migration followed similar decadal patterns in other rural counties, but net migration gains were consistently more common in both growing counties and those counties with population losses that were not classified as depopulating.

Widespread rural migration losses have long been a concern, in part because young adults—those of childbearing ages and with low mortality—are the most likely to leave (see Johnson and Fuguitt 2000; Johnson

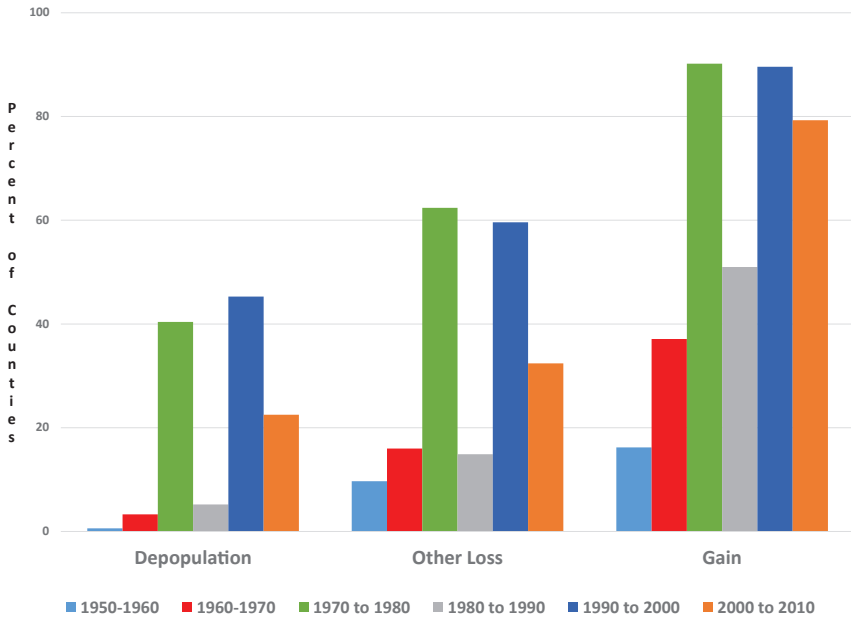


Figure 6. Percentage of nonmetropolitan counties with net migration gain by depopulation status, 1950 to 2010. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

and Winkler 2015). Not only does this young adult out-migration represent an immediate loss of human capital, it also has significant long-term demographic implications. Depopulating counties have long experienced extraordinarily large losses of young adults to out-migration. As shown in Figure 7, the average decadal loss of young adults, aged 20–24, from depopulating rural counties from 1950 to 2010 was 43 percent.

Not surprisingly, persistent out-migration of young adults, sustained over many decades, had an especially adverse demographic impact on depopulating counties. Our analyses show that chronic out-migration from depopulating counties was associated with large reductions in women of childbearing ages, resulting in many fewer births. Chronic out-migration of young adults also accelerated the aging in place among those “left behind,” resulting in a growing percentage of older adults and rising mortality. The immediate effect of fewer births has been to reduce the magnitude of gains from natural increase in depopulating counties. But over the longer term, young adult out-migration, aging in place, and low fertility will result in natural decrease—where deaths exceeds births. Indeed, as shown in Figure 8, natural decrease is now widespread in depopulating counties.



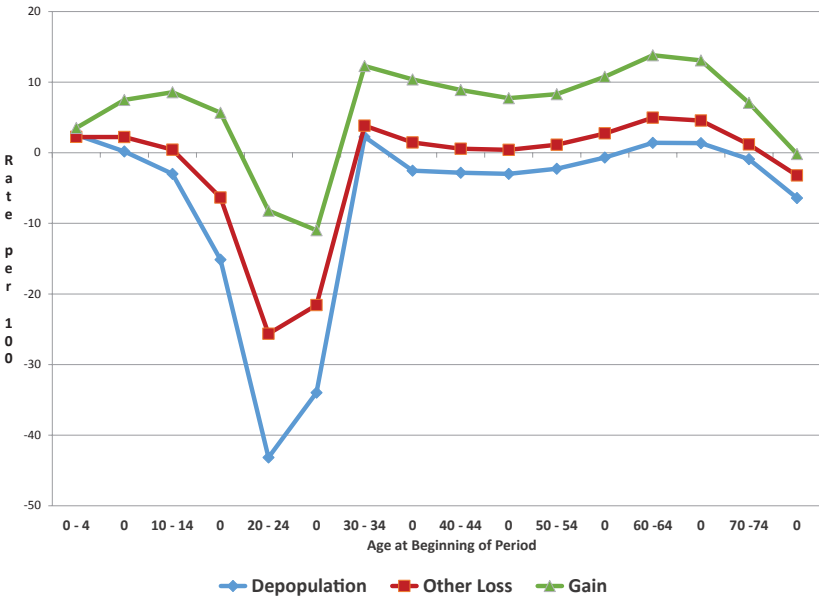


Figure 7. Mean age-specific net migration by depopulation status of nonmetropolitan counties, 1950 to 2010. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

Virtually all depopulating counties experienced natural increase during the 1950s, when the baby boom was in full force. Population losses during the 1950s were due entirely to net out-migration. However, as the baby boom turned into a baby bust in the late 1960s, nearly half of the depopulating counties experienced natural decrease. Natural increase again became more widespread during the 1970s and 1980s, presumably because America’s large baby boom cohort had reached adulthood and, after some delay, started having children. Natural increase was further reinforced by lower rates of young adult out-migration during the nonmetropolitan turnaround of the 1970s. In contrast, during the 1990s and 2000–2010, the incidence of natural increase declined sharply in depopulating counties. Some 60 percent of depopulating counties had natural decrease during the 1990s and 2000–2010.<sup>8</sup> The incidence of natural increase in the other two categories (other loss

<sup>8</sup>This reflects the cumulative effect of protracted young adult out-migration. Births declined because there were fewer childbearing age adults in each successive generation and because overall fertility rates declined nationwide. Deaths increased because of aging in place among the local population that did not migrate earlier. As a result, deaths began to exceed births in a growing share of depopulating counties.

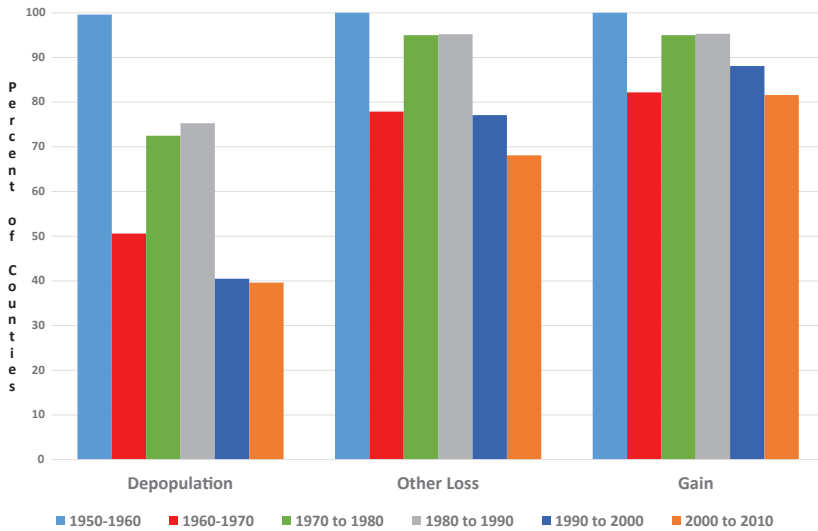


Figure 8. Percentage of nonmetropolitan counties with natural increase by depopulation status, 1950 to 2010. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

and gain) of nonmetropolitan counties follows similar longitudinal patterns.

How did natural increase (or decrease) and net migration combine to produce depopulation? In the 1950s, depopulation occurred when losses from net out-migration offset natural increase. Nearly 91 percent of the depopulating counties had net out-migration during the 1950s, but almost all still had natural increase (Figure 9). In the 1960s, natural decrease became more commonplace and often occurred in combination with net out-migration. The onset of the rural turnaround in the 1970s temporarily altered the trends. In fact, 39 percent of the depopulating counties gained population during the 1970s. Those that continued to lose population did so primarily because net migration losses exceeded natural increase. But the turnaround in depopulating counties was short-lived. In the 1980s, 29 percent of the depopulating counties had net migration losses and natural decrease and another 61 percent had such a large migration loss that it offset natural increase. Some depopulating counties rebounded to population growth during the 1990s, but such growth was limited because natural decrease and out-migration had become considerably more common. The 1990s rebound in growth was also short-lived. By the first decade of this century, natural decrease and

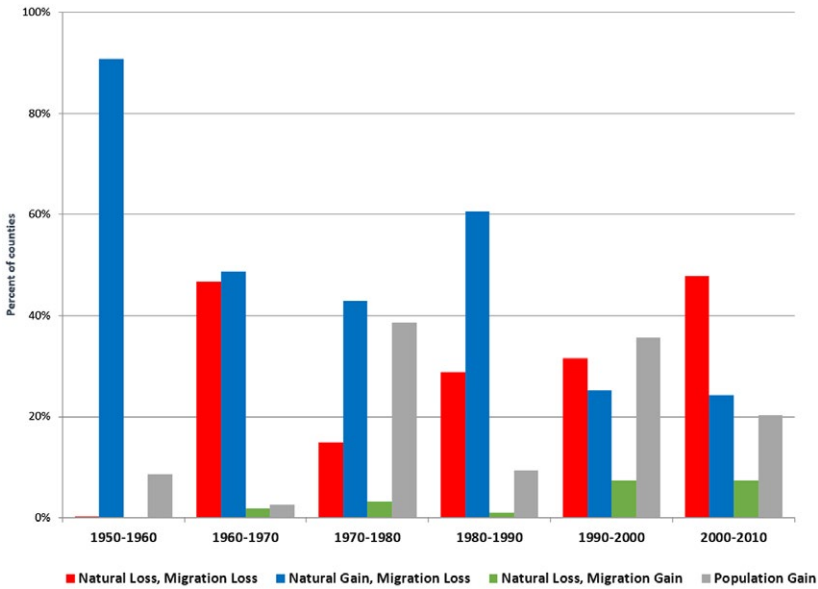


Figure 9. Components of change for depopulating counties, 1950 to 2010. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

net migration loss occurred simultaneously in nearly 48 percent of the depopulating counties. Net out-migration exceeded natural increase in another 24 percent of counties.

What was the cumulative impact of these components of change on the depopulating counties? Between 1950 and 2010, present-day non-metropolitan America grew by 23 percent to 47,170,000 (data not shown). In contrast, depopulating counties as a whole lost nearly 32 percent of their population—down to just 6,396,000 residents in 2010. The cumulative net migration loss from these areas was 4,780,000. Modest natural increase offset much of this out-migration during the 1950s and 1960s, but the excess of natural gain over migration loss dwindled due to the cumulative impact of chronic out-migration. Eventually, fewer births and more deaths reduced overall gains from natural increase. Over the 60-year period, population gains from natural increase amounted to just 1,700,000 people.

A simple comparison of depopulating counties to other rural counties underscores the extent of these population losses. Among counties that lost population but were not depopulating, the population actually grew during the 60-year period by 7.4 percent to 14,890,000. These counties

experienced sufficient natural increase to offset population losses from net out-migration. Among rural counties at their population peak in 2010, the population grew by nearly 75 percent or 25,883,000 people between 1950 and 2010. Here significant net migration gains supplemented nearly universal and substantial natural increase.

### A Coda on Recent Population Patterns

So far, we have examined rural depopulation trends over several decades to see the broad sweep of demographic change. But what about contemporary trends? Although postcensus population estimates from the U.S. Census Bureau must be used with caution, they provide a glimpse of recent demographic change. As noted earlier, for the first time in history, nonmetropolitan America as a whole lost population between 2010 and 2016. Among depopulating counties, only 18 percent gained population between 2010 and 2016 (Figure 10). Here the widespread population loss reflects the sustained impact of natural decrease coupled with widespread net out-migration. Just 36 percent of all depopulating counties had natural increase between 2010 and 2016 and only 20 percent had net in-migration.

The situation was only slightly better among other rural counties with population loss between 1950 and 2010. Just 20 percent gained population between 2010 and 2016. Only a slight majority of these counties

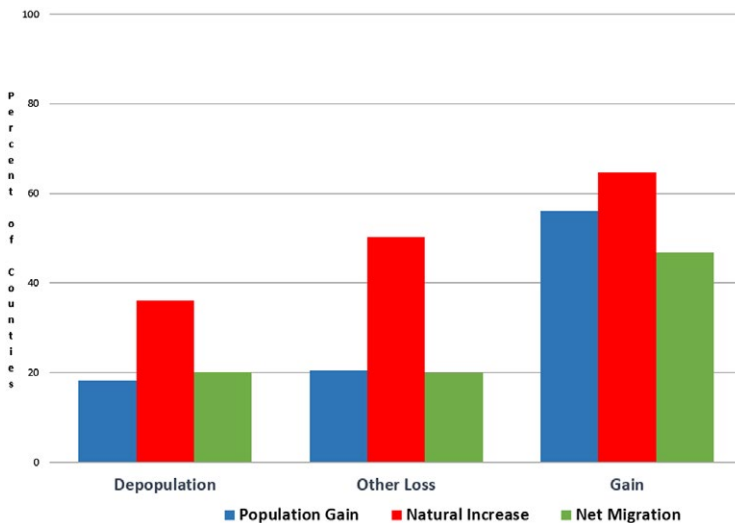


Figure 10. Nonmetropolitan demographic change by depopulation status, 2010 to 2016. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

had natural increase and just 20 percent had a net migration gain. This underscores the increasing challenge these counties face in sustaining future population gains.

Perhaps the most striking finding from the contemporary data is that even among the growing nonmetropolitan counties that were at their population peak in 2010, just 56 percent gained population between 2010 and 2016. Only 47 percent had a net migration gain during the period and just 65 percent had natural increase. This is considerably fewer than the 79 percent with net in-migration and 82 percent with natural increase during 2000–2010. That nearly half of the counties with long histories of population gain are now losing population underscores the future demographic challenge that nonmetropolitan America faces.

### **Discussion and Conclusion**

Our goal here has been to both highlight contemporary patterns of rural depopulation in the United States and trace its genesis to the early decades of the twentieth century. Indeed, our analysis of historical and contemporary census and vital registration data has clearly highlighted the widespread spatial diffusion of rural depopulation, which seemingly now has a clear demographic grip on large numbers of America's rural counties. We have documented for the first time how net migration and natural decrease now work in demographic tandem to reinforce chronic population losses. Our study places the spotlight squarely on rural population change, which is especially important in light of widespread political backlash and growing resentment among rural voters, and newly documented evidence of growing economic and social malaise (e.g., opioids) in rural areas “left behind” in America's increasingly urban and globalizing economy (Lichter and Ziliak 2017; Wuthnow 2018).

Our study provides clear evidence of widespread rural depopulation and increasingly divergent patterns—both in contemporary and historical perspective—from America's metropolitan regions. First, we show that growing numbers of depopulating counties cumulated in absolute population decline for rural America as a whole between 2010 and 2016 and, as we show, even among rural counties with long histories of growth, only 57 percent gained population between 2010 and 2016.

Second, our analysis has linked contemporary patterns of population decline to a much earlier period in America's demographic history. We show that today's widespread pattern of population loss can often be traced to population declines that first appeared before 1950. Our new typology of depopulating counties revealed that many rural counties reached their peak populations in an era when agricultural employment

was still robust, before small farms and local communities supported by a farm-based economy became demographic casualties of increased mechanization and consolidation. This is revealed today in widespread depopulation across a broad swath of America's agriculture heartland.

Third, unlike previous studies, we show that depopulation not only is a direct result of net out-migration but that chronic out-migration eventually produces large second-order effects on fertility and mortality that are eventually manifested in natural decrease. By definition, aging populations produce more deaths over time, while the hollowing out of young adults of reproductive age results in fewer births. Working together, net out-migration and natural decrease have clearly exacerbated the diminishing rate of rural population growth over the past decade or two and contributed to a downward spiral of population loss in some areas.

Our results provide a singular lesson and a useful empirical baseline for additional research. First and foremost, our research highlights the fact that depopulation today is rooted in the past. Chronic out-migration eventuates over time in natural decrease, which in turn compounds ongoing rural decline. In the absence of new in-migration, the clear implication is that America's rural areas—now and in the future—face an unprecedented demographic headwind. Our analyses also imply, second, that future nonmetropolitan population change will vary across geographic space. While some rural areas will be unable to avoid a continuing downward population spiral, all is not lost in rural America. We have identified numerous rural regions where population growth has been robust for decades including in nonmetropolitan counties just beyond the urban edge, as well as in recreational and retirement areas. Many of these counties will likely hold their own demographically in the future. From a policy standpoint, this suggests that successful investments in rural infrastructure and other community development activities must be carefully focused.

Our results arguably suggest at least three possible policy avenues for addressing the prospect of rural depopulation. Each has its own political challenges. One strategy is to change the location of investment, to divert resources from local to regional economic growth—perhaps first in urban employment centers—with the expectation that surrounding rural communities will share the benefits from integration and economic interconnections (i.e., commuting and economic spillovers) under a mostly urban umbrella (Tsvetkova, Partridge, and Betz 2017). A second strategy—a contentious one—is to identify and invest strategically in rural demographic “winners” or those places with the prospect of sustainability and future growth. This strategy of selective investment has already been adopted in some largely rural states (e.g., Nebraska). Of

course, whether federal or state governments should be actively picking winners and losers is a matter of considerable policy debate. This also is a strategy that is at odds with the contemporary rural economic development strategies that sometimes target declining places with little prospect of success. Rural enterprise zones (i.e., Promise Zones) are a recent example of this strategy. Finally, rural communities might choose to market themselves as receptive to immigration, in populations where the potential for in-migration and subsequent fertility is often greatest (Carr, Lichter, and Kefalas 2012). Some additional analyses (not shown) indicate that Hispanics contributed more than two-thirds of the rural population gain between 2000 and 2010. This cushioned non-Hispanic population losses in many rural counties. Hispanic growth was often the difference between overall population growth and decline (Johnson and Lichter 2016).<sup>9</sup> For example, in Huron, South Dakota, a small town of roughly 14,000 residents, refugee populations from around the world have become the impetus for recent population and economic growth in the meatpacking and processing industry (Harlan 2018). New immigrants have provided a demographic lifeline.

Our study has highlighted contemporary and historical patterns of population growth and decline in nonmetropolitan counties over the past century. It also provides a demographic window to the future and a sober forecast of continuing rural population decline in many economically depressed regions. The unprecedented overall rural population declines between 2010 and 2016 may be a short-term demographic aberration, but depopulation has already become commonplace in many rural regions and communities—and will be difficult to reverse. Future rural population growth and decline clearly is deeply rooted in evolving patterns of migration, fertility, and mortality. It is well past time to refocus our attention on the rural people and places “left behind.”

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<sup>9</sup>Nearly 90 percent of our depopulating counties experienced Hispanic population growth between 2000 and 2010. For most counties, however, Hispanic population gains were insufficient to offset non-Hispanic losses.

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