Received: 17 April 2023 | Accepted: 28 May 2024

DOI: 10.1002/psp.2802

RESEARCH ARTICLE

WILEY

Spatial poverty dynamics and social mobility in rural America

Dylan S. Connor[1] | Siqiao Xie[1] | Johannes H. Uhl[2] | Catherine Talbot[2] | Cyrus Hester[2] | Taylor Jaworski[2] | Myron Gutmann[2] | Stefan Leyk[2] | Lori Hunter[2]

[1]Arizona State University, Tempe, Arizona, USA

[2]University of Colorado Boulder, Boulder, Colorado, USA

Correspondence
Dylan S. Connor, Arizona State University, Tempe, AZ, USA.
Email: d.c@asu.edu

Funding information
Eunice Kennedy Shriver National Institute of Child Health; Human Development of the National Institutes of Health, Grant/Award Numbers: R21 HD098717 01A1, P2CHD066613; National Science Foundation, Grant/Award Number: 1924670

Abstract

Rural America is often depicted as a distressed and left-behind place, with limited opportunities for the children growing up there. This paper addresses this topic by examining the dynamics of rural places over the past four decades and how these changes impact the economic mobility of children raised in poor rural households. Employing a place-based framework, we utilise sequence analysis to identify dominant trajectories of change for more than 8000 rural communities. Our analysis reveals highly diverse community trajectories that connect deindustrialisation and racial inequality to elevated and rising poverty rates in certain places, while also documenting more favourable poverty trends elsewhere. These diverging local outcomes shed new light on the conflicting narratives surrounding rural America. We then demonstrate that, among children from poorer households, exposure to community poverty is predictive of adult economic mobility, patterns which are partly mediated by family stability and child poverty. Our finding that poor *children* face additional disadvantages when they also grow up in poor *places* suggests a potential role for place-based policies and redistribution to help ameliorate these disparities.

KEYWORDS
data visualisation, inequality, multilevel modelling, rural demography, sequence analysis, social mobility

1 | INTRODUCTION

Technological and political forces have dramatically restructured the economic geography of the United States and Europe (Autor, 2019; Kemeny & Storper, 2020). Once prosperous industrial regions have stagnated, while an elite tier of 'superstar' metropolitan areas have risen to positions of prominence (Gyourko et al., 2013). The diminished role of rural regions in the modern economy and the selective nature of migration in and out of rural places have pushed many communities down paths of lower growth and higher unemployment (Hean & Partridge, 2022; Lichter et al., 2022). Less developed rural regions are now viewed as 'collecting grounds for America's poor' (Lichter et al., 2022, p. 1), many of which are also contending with aging populations and rising mortality rates (Cosby et al., 2019; Cromartie, 2020; Johnson & Lichter, 2019).

This paper describes the changing dynamics of rural communities and examines the impact of these trajectories on rural children. We utilise longitudinal information on thousands of places in the United States over the past four decades to measure the dominant forms of rural economic and demographic change and assess the impact of these changes on the economic mobility of children raised in poor rural households. Our analysis is based on a novel place-based framework that leverages a newly constructed longitudinal database of rural places since 1980, the recently developed Place-Level Urban-Rural ('PLURAL') index (Uhl, Hunter, et al., 2023), and a dynamic spatial classification framework derived from recent advances in GIScience (e.g., Delmelle, 2016, 2017). Through this analysis, we classify the trajectories of approximately 8500 rural places from 1980 to 2018 into 1 of 11 dominant community trajectories, which we then link to household and intergenerational mobility outcomes. We use this analysis to measure the effect of place on the

outcomes of poor children, beyond the isolated role of household circumstances.

This work advances our understanding of the link between rural community change and economic mobility. Due to the prevalence of high poverty rates across many rural regions, intergenerational mobility is a vital mechanism for enhancing the welfare of rural youths as they transition into early adulthood. Yet, despite its significance, only a small body of work has addressed this topic directly. The sociologist Daniel Lichter attributes this situation to the 'urban-centric view (that) tends to dominate, with a lot of attention on poor children in big cities' (National Academies of Sciences & Medicine, 2022, p. 42). This inclination toward urban-centric research limits our understanding of rural communities, thereby overlooking valuable insights into how intergenerational mobility operates across a wider spectrum of sociocultural and spatial contexts.

While there are relatively few comparative studies of rural intergenerational mobility, the field has recently begun to grow. County-based analyses have addressed the general patterns and correlates of intergenerational mobility across rural regions, documenting that family stability, social capital, poverty and racial segregation are highly correlated with intergenerational mobility outcomes (Krause & Reeves, 2017; Lichter & Johnson, 2021; Weber et al., 2018). Prolonged economic hardship is also predictive of reduced upward mobility for urban and rural children (Connor et al., 2024). Many of the correlates of human capital, childhood development, and intergenerational mobility therefore appear to be similar across rural and urban contexts (Chetty et al., 2014).

Rural intergenerational mobility is also characterised by distinctive patterns. A recent place-level study reveals that children growing up in poor households in rural places exhibit *higher* average rates of upward mobility than their urban peers (Connor, Hunter, et al., 2023). Given that economic opportunity is increasingly concentrated in large cities, this 'rural advantage' at first seems paradoxical. The authors show, however, that this counterintuitive pattern is driven by the outcomes of rural boys, who are more likely than their urban peers to grow up in communities with a predominance of two-parent households, which is advantageous for upward mobility. Furthermore, these income benefits are largest for rural children who later move to urban labour markets (Anstreicher, 2024; Carr & Kefalas, 2009; Parker et al., 2022). Exactly how these patterns play out across a diverse and changing rural America is a topic in need of further investigation.

Our work contributes to the literature on rural demography and intergenerational mobility in several respects. Our analysis investigates rural intergenerational mobility, for the first time, within the changing demographic and economic trajectories of rural places, examining how place-level change relates to patterns of childhood poverty and intergenerational mobility. This analysis thus marks an important step toward understanding the diversity of intergenerational mobility outcomes across a changing rural landscape.

Our place-based framework advances the existing literature through its spatial scale and temporal perspective. In both urban and rural intergenerational mobility research, there is a tendency to take a cross-sectional perspective on locational data, rather than considering the dynamic nature of neighbourhoods, communities and regions (for exceptions, see: Chetty et al., 2017; Connor & Storper, 2020). Relying solely on cross-sectional analyses can lead to bias by overemphasising the significance of a place's characteristics at a specific moment while neglecting ongoing processes of change such as rising poverty, depopulation, or deindustrialisation.[1] Additionally, our focus on rural places departs from conventional rural demographic analysis, which often prioritises counties as the dominant unit of analysis (Hunter et al., 2020). While there are, of course, challenges irrespective of whether we use counties or places, we contend that dynamic and finer-scale analyses have the potential to enrich our understanding of the process of rural community change.

2 | STUDYING PLACE AND COMMUNITY DYNAMICS

The study of community, neighbourhood, and regional spatial structure has long been a topic of concern for spatially minded social scientists. Such efforts are evident throughout the work of the Chicago School of Urban Sociology (Park & Burgess, 1925), postwar social area and urban computational analysis (Berry & Rees, 1969; Shevky & Bell, 1955), and, more recently, the study of neighbourhoods and their effects on human development (Sampson, 2012, 2018). This tradition has been informed by urban theory and sequentially propelled by advancements in the availability of data and computational analysis.

The field is again experiencing a renaissance, driven by an influential strand of work at the intersection of GIScience and urban planning and drawing on methods originating in genomics (Delmelle, 2015, 2016, 2017, 2019). Recently, GIScientists have been concerned with the trajectories of neighbourhood change and persistence through the application of computational approaches to *longitudinal* data on urban neighbourhoods (Connor et al., 2019). The ability to study the trajectories of individual neighbourhoods, at scale, breaks with earlier efforts, which have generally relied on cross-sections or repeated cross-sections of data.

This new literature on place trajectories is advancing in many different directions. Moving beyond the study of neighbourhoods in the United States (Li & Xie, 2018; Wei & Knox, 2014), there are analyses of urban areas in Britain (Patias et al., 2022), Sweden (Vogiazides & Mondani, 2023), Spain (González-Leonardo et al., 2023), the Netherlands (Zwiers et al., 2017), China (Xie et al., 2022), and increasingly, multicountry and continental analyses (Le Petit-Guerin et al., 2023; Newsham & Rowe, 2023).[2] There is also much innovation with respect to

[1]Connor and Storper (2020) highlight this problem when studying the purported negative relationship between manufacturing employment and intergenerational mobility. This relationship appears to be negative in cross-sectional data but is positive in longitudinal data. This is because the regions experiencing the largest deindustrialisation shocks are still among the highest ranking in terms of manufacturing employment.

[2]These approaches are also being applied to larger spatial units like counties, metropolitan areas, and commuting zones (Kemeny & Storper, 2020; Park & Xu, 2020; Uhl, Connor, et al., 2021). The findings from this more regional literature highlights a significant shift in the levels and mechanisms generating change and stability. Specifically, at more regional scales,

methods, algorithms and data visualisation (Dias & Silver, 2021; Jung & Song, 2022; Knaap, 2022; Lan et al., 2021; Olson et al., 2021; Silver & Silva, 2021). The domain of questions has moved beyond the classic theoretical issues of neighbourhood change to increasingly address contemporary applied problems relating to population decline, ageing, and left behind places (Connor et al., 2024; Houlden et al., 2022).

Although this field is revealing important facts about how places change and stay the same, the wide-ranging and data-driven focus of this work makes it difficult to extract general theoretical insights. The studies above have revealed a wide range of trajectories that are intuitive within their local contexts, and we now know much more about how neighbourhoods are changing (or not) across different contexts. Due to the spatial nature of the processes that steer community change, such trajectories tend to be spatially concentrated and exhibit discernable geographic patterns. For example, the forces fuelling deindustrialisation and gentrification act on communities in ways that can be observed locally, through the changing patterns of unemployment, incomes and sociodemographic characteristics, in both former industrial regions or central-city areas.

Further, despite the general concern among social scientists' with processes of change, many of the studies above find that neighbourhoods tend to stay within the same classes across the study period (Wei & Knox, 2014; Zwiers et al., 2017). This observation is confirmed by focused analyses showing that neighbourhood stability tends to be the norm, but when change does occur, it is often highly localised (Connor et al., 2019). In some respects, these studies are tempering claims of widespread sociodemographic change.

Our work secondarily contributes to this spatial analytic literature. First, we apply these methods from GIScience for the first time to places in rural America. Our dynamic approach to rural places could prove to be particularly valuable given the emphasis in rural demography on recent patterns of change at the county-scale (Hunter et al., 2020; Lichter & Brown, 2011; Lichter et al., 2021; Lichter & Johnson, 2021; Slack & Jensen, 2020; Weber et al., 2018). Second, the current literature has largely relied on these methods as tools of description and has only begun to leverage these approaches toward inference (Connor, Berg, et al., 2023; Houlden et al., 2022). Most notably, do these trajectories offer evidence of neighbourhood and place effects operating on population outcomes, beyond the characteristics of individuals and household? We directly address this issue here.

3 | DATA AND METHODS

3.1 | Database of rural places, 1980–2018

Our focus on the changes unfolding across rural communities rather than regions leads us to rely on a finer spatial unit – incorporated and census designated places – than is typically used in the current rural demographic literature. The Census Bureau describes incorporated places as legally bounded entities, including cities, boroughs, towns or villages. Census Designated Places (unincorporated places) are statistical entities that are not legally incorporated, but which are identifiable by name and contain people, housing and commercial activity. Although the study of rural places was once popular in rural research (Fuguitt, 1965, 1971), counties have become the preferred spatial unit.

Counties are valuable because of their relative consistency over time and their congruence with data sources like the Current Population Survey. As we have noted, counties also pose several constraints on studying rural contexts: (1) most rural dwellers in the United States today actually live in metropolitan counties; (2) county-based classification prohibits study of intracounty rural dynamics; (3) large county sizes means that they cover significantly larger areas than the areas around which individuals live their lives.[3] Our place-level approach helps to alleviate these concerns.

We rely on a longitudinal data set of all places in the lower 48 states, observed from 1980 to 2018 (Hunter et al., 2020). This data set includes place-level attributes from a combination of the decennial census and the 5-year estimates of the American Community Survey (ACS) over five time periods: 1980, 1990, 2000, 2010 and 2014–2018. We track communities based on how their attributes are changing in each year.

There are several challenges to using place-level observations to study rural change. The first challenge is sampling error in the ACS, which can lead to noisy estimates in places where population counts are low (LeBeau, 2023; Spielman et al., 2014). Second, many rural dwellers live outside of places. Based on data from 1990, it was estimated that approximately 26% of US residents lived outside of places, mostly in small settlements, open countryside or on the fringes of cities (Census Bureau, 1994). These 'non-place' populations are omitted from our analysis.[4] As these two issues reflect fundamental features of the data collection, there is no direct solution to these problems. We therefore address these problems by testing the sensitivity of our results and the potential biases that may be due to populations outside of places and ACS sampling error.

The third and final challenge – which we address directly – is in classifying places as rural/nonrural. While previous county-based analyses rely on classification schemes like the Rural-Urban Continuum Codes ('RUC codes') from the Office of Management and Budget (OMB), there is no such classification for places. We rely on the recently constructed PLURAL index (Uhl, Hunter, et al., 2023), which makes use of distance-based metrics, Voronoi tessellations (Aurenhammer, 1991), and spatial networks to model the rural-urban

patterns related regional economic development, settlement, and urbanisation appear to play a much greater role than the sociodemographic pathways identified in the neighbourhood literature.

[3]This is particularly problematic in the Southwest, where large counties like San Bernardino (California) and Maricopa (Arizona) incorporate urban regions like Los Angeles and Phoenix, but also enormous tracts of rural settlements and uninhabited land. Our focus on places helps address some of these challenges.

[4]In Figure A1, we map the share of the population of each county that resides outside of incorporated and census designated places. While urban regions of the Northeast, Midwest, and Southwest have the smallest shares of residents outside of places, significant 'non-place' populations are evident across regions of Appalachia, northern Michigan, the Mississippi River Basin, and the Intermountain West.

continuum at the place-level in the conterminus United States from 1930 to 2018. Specifically, the PLURAL index uses the total population of a place and its distances to other places in the size categories of 10,000–20,000, 20,000–50,000, 50,000–100,000, 100,000, 250,000 and over 250,000. The PLURAL index is scaled continuously from 0 (least rural) to 1 (most rural). The creators of this index have determined that the value of 0.55 provides an approximate threshold, above which we can reliably infer that a place is rural. We restrict this database to places that were above this threshold in 1980.[5] Based on our 1980 inclusion criteria, which we map in Figure A2, we classify 8472 of the 20,639 places in the lower 48 states as rural.

3.2 | Intergenerational mobility estimates

Studying social mobility at the scale of places required re-estimation of tract-level estimates of intergenerational mobility and migration estimates, published by Opportunity Insights (Chetty, Friedman, et al., 2018). These estimates are derived from analysis of over 20.5 million children from the 1978 to 1983 birth cohorts, who are assigned to census tracts based on the proportion of their childhood that they spent in those locations, irrespective of where they ended up living. The ability to tie individuals back to their childhood locations helps overcome the selection bias problems that arise when you compare populations of migrants and nonmigrants (e.g., Borjas, 1987; Connor, 2019).

Our core dependent variable in these data is a measure of the adult household income rank of individuals who grew up in low-income rural households. Specifically, the measure captures the household income rank of adults in the national distribution circa 2015, for individuals who grew up in rural households that were at the 25th percentile of the national income distribution in the 1990s.[6] This common baseline income level means that our analysis focuses on differences in the upward income mobility of children from similarly poor backgrounds in different places, rather than comparing children from higher income households in one place to children from lower income households in another.

We refined these tract-level estimates to places through areal interpolation and dasymetric refinement (Goodchild et al., 1993; Ruther et al., 2015). Our interpolation relied on 30-m resolution maps of the distribution of residential land across the United States from the 1992 National Landcover Database as an ancillary data layer. This information provided a set of spatial weights to reapportion estimates of income mobility at the intersection of census tracts and published place-level boundaries from the National Historical Geographic Information Systems repository (Manson et al., 2017).

We generated the tract-to-place weights by multiplying the total number of children in a census tract used to generate the mobility estimates, as recorded by Opportunity Insights, by the proportion of that tract's land area that intersects with a place. That is, we spatially allocated the children of interest from tracts to places based on overlapping residential land area. This enabled the generation of reliable population-weighted estimates of every place's upward income mobility level. In the robustness section, we show that our findings are not distorted by very rural tracts with small numbers of children.

3.3 | Extraction of place-based trajectories and data visualization

We identify the trajectories of change across rural communities (places) using sequence analysis. Our favoured approach is an emerging technique known as multidimensional sequence analysis (Brum-Bastos et al., 2018; Gabadinho et al., 2009, 2011; Gauthier et al., 2010), which we apply to data on the economic conditions (poverty and incomes) and demographic structures (total population and age composition) of rural places from 1980 to 2018. We choose these economic and demographic variables as they represent a fundamental but minimal set of indicators for community vitality. Changes in poverty and income levels provide a strong sense of a local population's standard of living, while the size and age structure of a community is a fundamental indicator of its ability to sustain itself into the future. Many other variables could be used to construct these sequences, but for the reasons outlined above, we favoured a parsimonious approach.

In the first stage of our sequence analysis, we classified every place into a cross-sectional economic cluster and a cross-sectional demographic cluster for every place-year observation.[7] As we observe every place in five distinct time periods, each place is classified into an economic cluster five times and a demographic cluster five times. These clusters were generated using k-means clustering (Hartigan & Wong, 1979). The economic clusters are formed based on the natural log of median household income and the poverty rate. We have loosely labelled these four clusters: low poverty; medium poverty; high poverty; very high poverty. We generate demographic clusters based on age structure and total population. We label these clusters: very small size and working age; very small size and very old; large size and working age; large size and old; medium size and very young; medium size and young; medium size and old. A rural place might, for example, be classified as being medium sized and young with high poverty at the beginning of our

[5]This threshold is equivalent to the rurality of the average place within counties that have an urban population of 20,000 or more and are not adjacent to a metropolitan area (RUC code 5) and for places in counties that have an urban population of 2500 to 20,000 and which are adjacent to metropolitan areas (RUC code 6). These larger settlements thus provide a lower bound for rurality within our data.

[6]This baseline income measure is determined based on the parents mean household income over the 5 years of 1994, 1995, 1998, 1999 and 2000. In the original production of these estimates by Chetty et al. (2014), no tax records were available for 1996 or 1997.

[7]We decided not to incorporate more clustering variables because the inclusion of too many variables results in an overfitting of the clusters and biases the trajectories toward temporal and spatial stability.

study period, and medium sized and old with lower poverty at the end.

The second stage of our approach classifies places based on their joint movement through the economic and demographic clusters from 1980 to 2018. We experimented with a range of sequencing algorithms, but ultimately selected the partitioning around medoids or 'PAM' algorithm due to its efficiency and flexibility. This sequencing approach and its goodness-of-fit statistics have been implemented in supplementary packages within R (Gabadinho et al., 2009). Based on comparisons of fitting criteria such as silhouettes scores, within sum of squares measures, and the gap statistics (Gabadinho et al., 2009; Thorndike, 1953), we extracted 11 dominant rural trajectories of economic-demographic change.

Using our multivariate and spatiotemporal sequences, we employ a series of innovative visualization techniques. First, we use Sankey diagrams to visualize the place-based trajectories over time. The Sankey diagrams were constructed using Python, Plotly, and the GGPLOT package in R. Second, in order to visualize the geographic distribution of the place-level trajectories, we use Voronoi tessellations to represent each place as an areal geographic feature, allowing for visualization of discrete point data in spatially exhaustive choropleth maps, as proposed by Uhl, Hunter, et al. (2023). We also use these Voronoi tessellations to construct a spatial network implemented in the PySAL Python Package, allowing for a computationally efficient identification of the N-nearest neighboring locations for each place in a topological space. This approach allows for the effective mapping of the relative occurrences of clusters, despite considerable variation in the density of places across the country.

We illustrate the diversity of our trajectories through a figure and a table. Figure 1 provides the Sankey-based visual illustration of four of our major trajectories in the economic channel. Dominant forms of change and stability can be seen among the four example trajectories. In the statistics below, we find that the trends in poverty are particularly dominant in our analysis. As such, we organise our discussion of the place-level trajectories under these four broad poverty trends: high chronic poverty (15.2%), rising poverty (19.7%), low-medium poverty (50.4%), declining poverty (14.7%), and label the trajectories within these groups by letter (e.g., the three trajectories linked with a *rising poverty* are *2A*, *2B*, *2C*).

In Table 1, we list the 3 largest individual places for each of the 11 trajectories and their grouping. While the six places in the high chronic poverty trajectories are either in New Mexico or the South (Mississippi, Tennessee, Florida), the rising poverty trajectories are more likely to be rural industrial regions of the Midwest (e.g.,

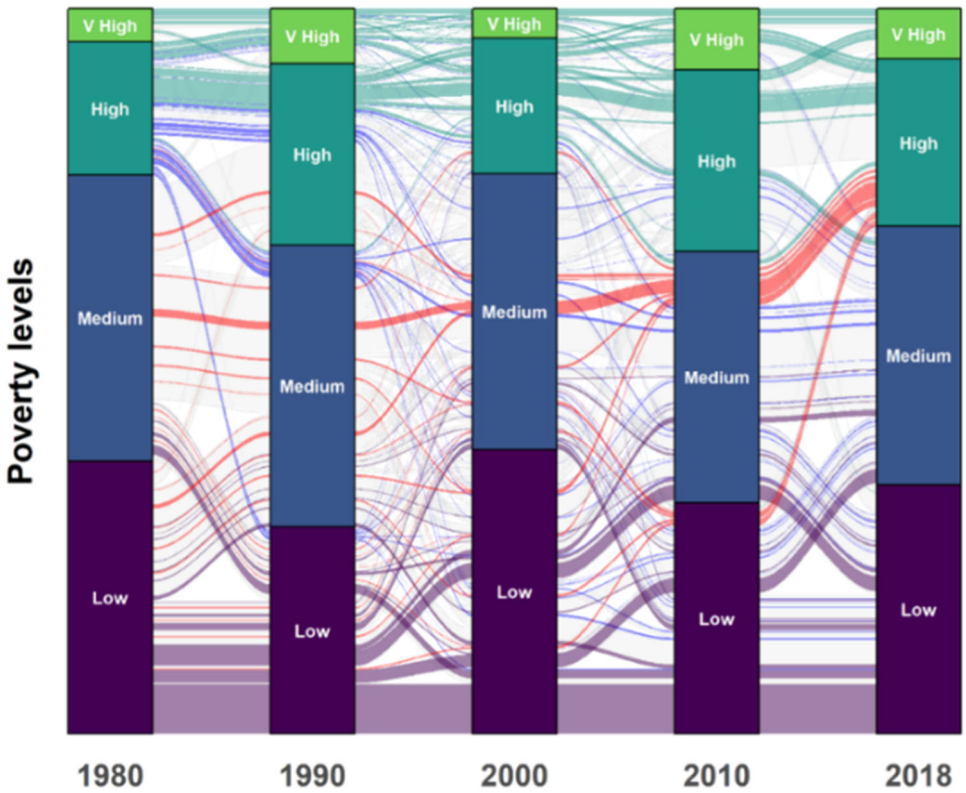

FIGURE 1 Poverty transitions for four trajectories of rural change, 1980–2018. Flow (Sankey) diagram depicting the economic sequences for places from 4 of the 11 trajectories. The boxes represent the cross-sectional economic clusters ('poverty levels') from 1980 to 2018. The colour coding maps the trajectories 1A (green), 2A (red), 3A (purple), 4A (blue). The clusters are named on the y-axis and then coloured from purple (low poverty) to light green (high poverty). The size of the bars illustrates the overall size of the cluster in a given decade. We include 4 trajectories across the economic domain to illustrate the structure of the data, but in total there are 11 trajectories as well as an economic and a demographic domain.

TABLE 1 Three largest places in each trajectory by total population in 1980.

	N	Size rank		
		First largest	Second largest	Third largest
1. High chronic poverty (15.2%)				
1A. Large, stable	962	Deming city, New Mexico	Portales city, New Mexico	Oxford city, Mississippi
1B. Medium, growing	322	Silver City town, New Mexico	Brownsville city, Tennessee	Lake City, Florida
2. Rising poverty (19.7%)				
2A. Small, growing	715	Barre city, Vermont	Chillicothe city, Missouri	Charles City, Iowa
2B. Large, growing	476	Weatherford city, Oklahoma	Platteville city, Wisconsin	Red Bluff city, California
2C. Large, growing, ageing	471	Orono CDP, Maine	Lock Haven city, Pennsylvania	Maryville city, Missouri
3. Low-med poverty (50.4%)				
3A. Medium, growing, ageing	1452	Carroll city, Iowa	Hutchinson city, Minnesota	Sturgeon Bay city, Wisconsin
3B. Large, stable, old	1281	Astoria city, Oregon	Caribou city, Maine	Riverton city, Wyoming
3C. Small, shrinking, old and ageing	951	Miles City, Montana	Thief River Falls city, Minnesota	McCook city, Nebraska
3D. Medium, stable, ageing	593	Alliance city, Nebraska	Lebanon city, Missouri	Baker City, Oregon
4. Declining poverty (14.7%)				
4A. Very small, shrinking	658	Lovington city, New Mexico	Trinidad city, Colorado	Clinton city, Oklahoma
4B. Very small, shrinking, ageing	591	Crestview city, Florida	Cuero city, Texas	Waynesville town, North Carolina

Note: A table showing the three largest places in each trajectory by population size in 1980. We show these places to illustrate the regional diversity in places within trajectories. As the shown places were chose based solely on population size, they are not necessarily the most representative places in each trajectory.

Wisconsin, Pennsylvania, Missouri). Lower poverty rural places are most concentrated in Midwestern and Great Plain states such as Minnesota, Iowa, Montana, and Nebraska, while five of the six places within the declining poverty trajectories are in the Sunbelt. There is therefore a strong and identifiable spatial patterning to these trajectories.

4 | RESULTS

4.1 | Describing trajectories of rural change

We begin by describing the 11 rural trajectories that represent the dominant forms of economic-demographic change within our series. Table 2 lists the total number of places that comprise each trajectory (*N*), as well as the attributes of the median places in each trajectory in 1980 and 2018 for three of our six key variables: share in poverty; population size; and the share aged over 65. For reference, we also include benchmarks for the average urban and rural places.

Our justification for grouping places based on their poverty levels is evident in Table 2. Two of the 11 trajectories are associated with high and chronic poverty rates across the study period. In 1980, the places following these trajectories had median poverty rates of 26% (*1B*) and 31% (*1A*). These rates are between 60% and 90% higher than the overall rural average and are more than double that of the urban average. Up to 2018, these levels rose modestly, by around one percentage point. These two chronic poverty trajectories account for approximately 15% of rural places.

Although the two trajectories within this grouping share similar poverty rates, they differ in several other respects. Trajectory *1A* captures relatively larger rural places with a median population of 916 in 2018, a 6% increase from the 1980 level. Places in Trajectory *1B*, in contrast, tend to be more mid-sized rural places, with a median population of 408 in 1980, which increased to 606 by 2018. These

TABLE 2 Median attributes of places in 2018 by trajectory, with changes since 1980 in parentheses.

		Poverty %		Population size		Aged > 65%		Social mobility, 1978–2015	
	N	1980	2018	1980	2018	1980	2018	Mean	Top decile (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
All urban places	12,167	8.85	11.97	2364	3221	12.54	16.09	0.44	4.47
All rural places	8472	14.39	16.00	556	602	17.94	18.86	0.47	18.00
Rural trajectories									
1. High chronic poverty (15.2%)									
1A. Large, stable	962	29.63	31.08	859	916	16.61	17.06	0.39	2.40
1B. Medium, growing	322	25.37	26.00	408	606	17.05	17.88	0.42	9.94
2. Rising poverty (19.7%)									
2A. Small, growing	715	13.61	25.75	344	518	18.61	18.22	0.46	17.80
2B. Large, growing	476	15.47	26.81	752	863	17.66	17.84	0.42	9.07
2C. Large, growing, ageing	471	17.19	27.78	662	836	16.46	17.89	0.42	7.69
3. Low-med poverty (50.4%)									
3A. Medium, growing, ageing	1452	8.49	8.67	548	617	16.18	18.64	0.50	26.90
3B. Large, stable, old	1281	12.29	14.83	869	866	20.79	20.67	0.49	23.80
3C. Small, shrinking, old and ageing	951	12.33	10.04	440	405	19.14	20.00	0.50	29.50
3D. Medium, stable, ageing	593	13.38	15.24	569	552	18.25	19.89	0.45	16.10
4. Declining poverty (14.7%)									
4A. Very small, shrinking	658	15.44	14.90	398	364	19.19	18.23	0.46	15.90
4B. Very small, shrinking, ageing	591	26.43	14.78	307	265	18.13	19.36	0.44	14.70

Note: A table showing three of the six variables used in sequencing, decomposed by trajectory and for urban areas. The median values are shown for 1980 and 2018. We show medians instead of means because a small number of outlier places (e.g., rural places that urbanise) distort the average picture of trajectories. The social mobility outcomes are presented in two ways. We first define them using the conventional approach in the literature, the adult income rank of children growing up in households at the 25th percentile of the national income distribution from the 1978 to 1983 birth cohorts (Column 8). Because the median value of this measure conceals much variation, we also present the percentage of places that fall within the top 10% of places across the country in terms of this measure (Column 9). For example, only 2.4% of places in Trajectory 1A rank in the top 10% of the place distribution in terms of intergenerational mobility.

trajectories have similar age structures and rates of aging. We thus refer to these high-poverty trajectories as *large*, *stable (1A)* and *medium*, *growing (1B)*.

The second group of trajectories are marked by almost a doubling of their poverty rates over the study period. Although the three trajectories in this group had substantially lower poverty rates in 1980 than the first group (1A, 1B), they had converged on them by 2018. Across the board, the poverty rates of these three trajectories have increased by over 10 percentage points since 1980, or by as much as 89% (*2A*). This is a striking change considering that approximately 20% of rural places fall into this grouping.

Despite the rising poverty rates of these trajectories, their demography is more typical of broader rural trends. The size of the median places in these trajectories ranges from 518 to 836 in 2018, with only minor changes in the median level over the study period. Like the other rural trajectories, they experienced more modest increases in share of population aged over 65. On average, these places have remained generally stable in demographic terms.

With rates of poverty that are below the rural averages, we refer to the third group of trajectories as persistently 'low to medium poverty'. There are four trajectories in this group, with median 2018 poverty rates ranging from 8.5% to 15.2% (Table 2). Two of these trajectories have poverty rates as low as 8%–10%, and two have moderate poverty rates of around 15%. Across all four trajectories, however, the rate of change is modest. In total, just over half of rural places fall into this group of trajectories (*3A*–*3D*).

There is notable demographic variation across these trajectories, particularly with respect to population size. The median size of places in 2018 ranges from 405 (*3C*) to 866 (*3B*), meaning that small, medium, and large communities (in rural terms) are well represented within this group (Table 2). The population growth rates of these trajectories are also quite variable. From 1980 to 2018, the median total population of *3A* grew by 12.49% but for *3C* it fell by 8%. There is thus variation in the population growth rates of these trajectories, but at levels not unusual for what we observe across rural places in general.

Places in the fourth and final group of trajectories are characterised by declining poverty rates. Trajectories *4A* and *4B* ultimately end up with median poverty rates of around 15% in 2018, levels resembling places from the low-medium poverty trajectories above (*3A*–*3D*). There are, however, large differences in the magnitude of the reduction in poverty across these two cases: *4A* experienced a modest decline of about half a percentage point from 1980, while *4B* experienced a very sizeable drop of roughly 12 percentage points (Table 2).

The places following these trajectories also tend to be very small. The median place in trajectory *4A* had a total population of 364 in 2018 and experienced a population decline of 8.5%. With a median population of only 265, the median place in *4B* is smaller again. The median population of *4B* also fell by 13.68% from its 1980 level, indicating shrinkage. The share of the population aged over 65 has also increased by more than a full percentage point since 1980. In addition to these declines in poverty, these places also tend to be comparatively old, small and shrinking.

Across the board, the trajectory classification is strongly correlated with intergenerational mobility. Specifically, trajectories characterised by chronic or rising poverty exhibit substantially lower social mobility levels than those with less poverty. While the difference between the urban and rural average for adult income attainment is only three points, there is an 11-point difference between places following the rural trajectories that are most unfavourable (1A) and favourable (3C) for intergenerational mobility (Column 8). In dollar terms, this 10-point disparity corresponds to a 16% difference in income progression relative to parents (base level = $27,000).

These differences in median outcomes, in fact, underplay the disparity with respect to which places deliver the most intergenerational mobility. We demonstrate this in Column 9 by showing the share of places that rank in the top decile of intergenerational mobility outcomes across the full distribution of places in the United States. The disparity between trajectories 3C and 2A in terms of this metric of place-based intergenerational mobility is 27.1 (29.5–2.4), a 12-fold difference. Communities that exhibit high rates of poverty therefore tend to be characterised by substantially lower rates of upward mobility among children from lower income families.

4.2 | Mapping trajectories of rural change

We examine the geography of these trajectories through a set of 'moving window' maps (Figures 2 and 3). For each, these maps show the prevalence of a specific trajectory among the 100 nearest places.

The two high chronic poverty trajectories are shown in Figure 2. Trajectory *1A* is most heavily concentrated in Kentucky, and the area spanning rural Georgia, Alabama, Mississippi and Louisiana, a region often referred to as the 'Black Belt' (Wimberley & Morris, 2002). Trajectory *1B* shares some of these patterns, but is different in its concentration in eastern New Mexico, northwest Texas, and in areas of northern and eastern Arkansas.

The trajectories characterised by 'rising poverty' are referenced in the maps for 2A–2C of Figure 2. Spatial clusters are evident in Appalachia, Michigan, and in several localised hubs, such as at the intersection of Colorado, Kansas and Oklahoma (*2A*), and in eastern Tennessee, Arkansas and Missouri (*2B*). These areas are known to have historical dependence on industrial, extraction, and large-scale agricultural activity. As we show below, these patterns are consistent with a picture of increasing poverty in places that have historically depended on primary and secondary economic activity, but which have since experienced hardship under industrial reorganisation.

The 'low-medium poverty' trajectories (*3A*, *3B* and *3C*) are shown in Figure 3. These places are disproportionately concentrated in the northern central areas of the country, particularly in the Northern Plains and Mountain regions and in the upper Midwest. These trajectories align with experiences of rural change in states like Colorado, the Dakotas, Wisconsin, Minnesota and Iowa. Trajectory *3D* is the only outlier here in its concentration in Maine and the Pacific Northwest. The varying regional geographies of these trajectories reinforce our claim that these place-level dynamics are not reducible to coarser patterns of regional development.

Finally, as shown in Figure 3, the 'declining poverty' trajectories exhibit some of the most distinctive spatial patterning. Of the 11 trajectories, *4A* and *4B* are by far the most concentrated in the state of Texas, but also have more minor concentrations in Minnesota and North Dakota and differ in their concentration in Oregon and the Northwest (*4A*) as opposed to the South (*4B*). It should be noted that these maps capture relative rather than absolute spatial distributions of the trajectories. This is important because even though places from *4A* and *4B* are twice as likely to be in Texas than the rural average, only 11% of places within these trajectories are in the state. Small communities with declining poverty rates are, therefore, overrepresented in Texas, but are also diffusely spread throughout the country. Places in trajectories *4A* and *4B* thus look favourable in terms of their poverty levels but are at the same time shrinking and ageing.

4.3 | Family structure and other descriptive statistics

This section further contextualises these trajectories and their relationships to intergenerational mobility, household structure and other inequality-relevant characteristics (e.g., education levels, industrial structure, ethnic and racial composition). In rural contexts, these characteristics are closely connected at the scale of places. Figure 4 demonstrates this relationship through a scatterplot of the relationship between the share of children raised in two parent households and adult intergenerational mobility outcomes for all rural places. This figure is a modified reproduction of Figure 2 from Connor, Hunter, et al. (2023), but where the data are restricted to only rural places and places are coloured according to the their poverty trajectories.

Figure 4 shows a strong and positive relationship between indicators of household structure and mobility outcomes ($r = +0.72$), implying that intergenerational mobility tends to be higher in

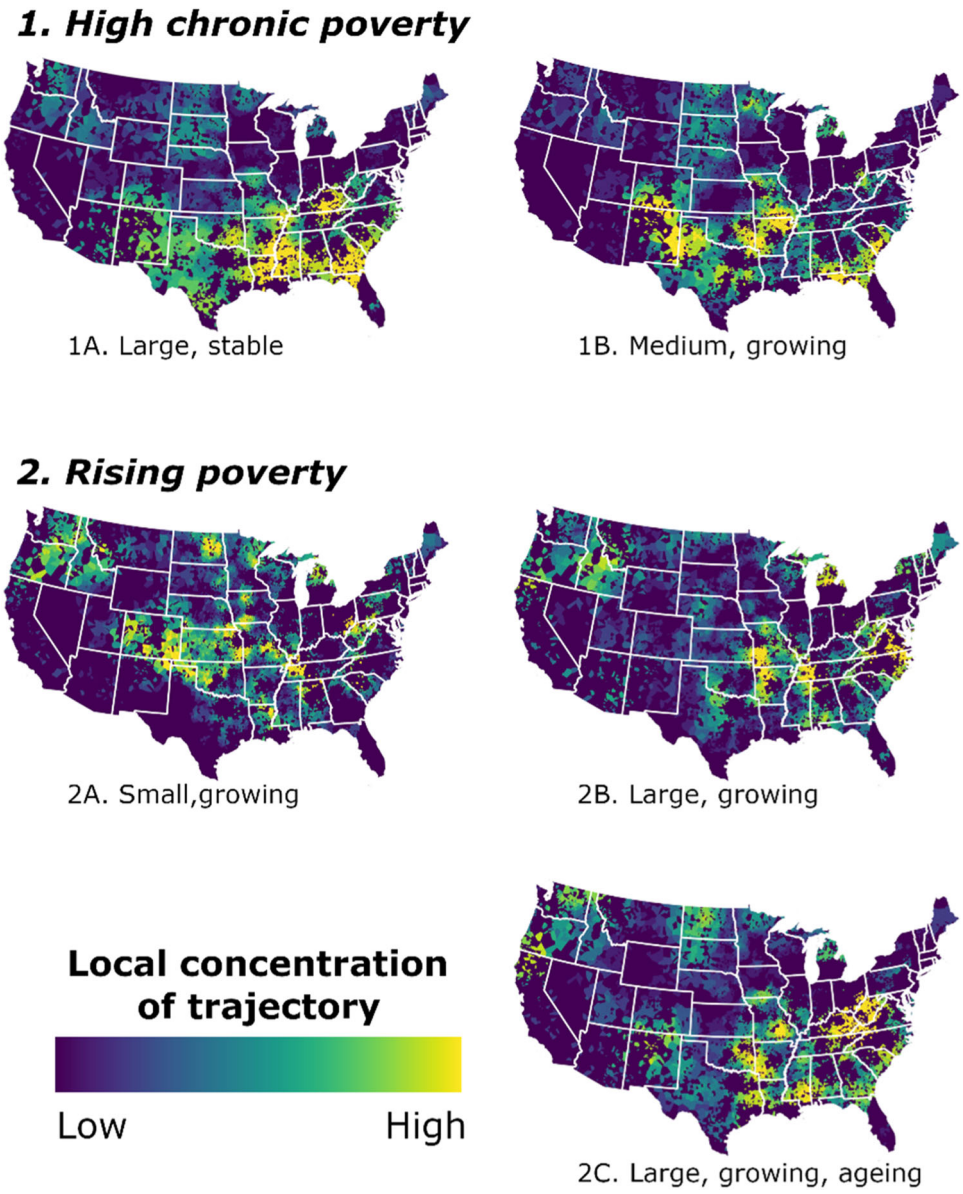

FIGURE 2 Maps of sequences of economic and demographic change from 1980 to 2018, 1A–2C. Five maps depicting the geography of trajectories across the United States, trajectories 1A–2C. We derive these patterns by: (1) representing each place by its Thiessen polygon; (2) using Voronoi tessellations to construct a topology-based spatial network; (3) using a 'moving window' approach to calculate the share of each trajectory that is among the 100 nearest neighbours for each place. The yellow colour signifies high local levels of concentration of the trajectory and dark blue signifies the absence of the sequence. Urban places have values of zero on the concentration and diversity measures and are thus coloured in dark blue in these maps.

contexts characterised by greater family stability. Furthermore, there is a clear intersection between these patterns and the trajectories of rural poverty that we have extracted here. The places with the lowest levels of intergenerational mobility and two-parent households are overwhelmingly those that are characterised by high or rising poverty (red), and which are disproportionately concentrated in the South and the Midwest. There is therefore a strong link between household structure, poverty, and intergenerational mobility.

It is conceivable that the relationships between these variables are indirect, and only linked through broad historical differences across regions. For example, the South has historically had lower rates of economic development than the Northeast, and the region is also distinctive in its history of structural racism and racially differentiated household structures (Morgan et al., 1993). Thus, it may be the case that these patterns are representative of longer-term regional effects rather than more recent community dynamics.

We investigate this possibility in Table 3 by presenting statistics on changes in household structure and household poverty from 1980 to 2018. For the population of children used to calculate intergenerational mobility (Opportunity Insights), there is a strong positive association across the trajectories in poverty rates and the probability of being raised in a two-parent household. At its largest, there is a

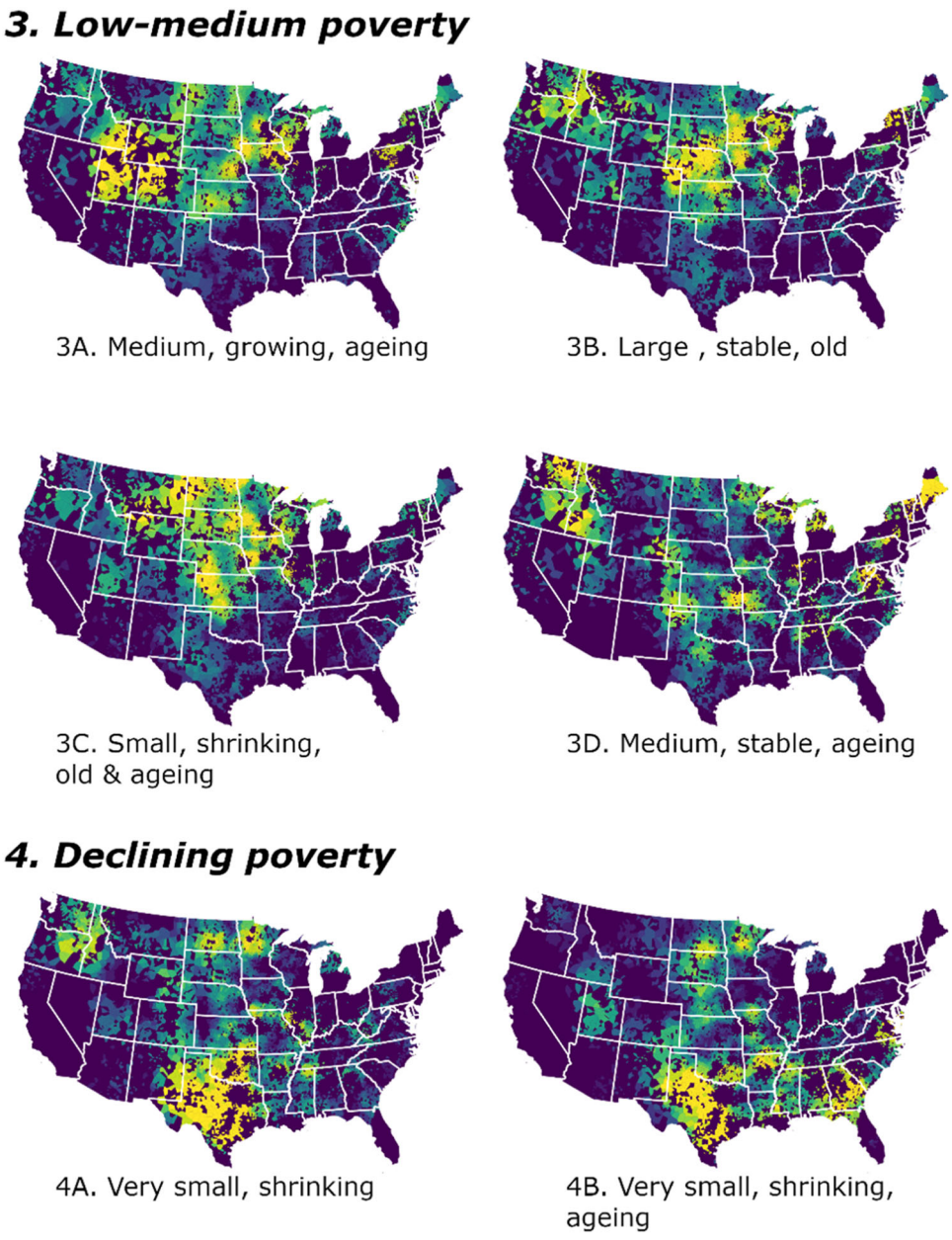

FIGURE 3 Maps of sequences of economic and demographic change from 1980 to 2018, 3A–4B. Six maps depicting the geography of trajectories across the United States, trajectories 3A–4B. We derive these patterns by: (1) representing each place by its Thiessen polygon; (2) using Voronoi tessellations to construct a topology-based spatial network; (3) using a 'moving window' approach to calculate the share of each trajectory that is among the 100 nearest neighbours for each place. The yellow colour signifies high local levels of concentration of the trajectory and dark blue signifies the absence of the sequence. Urban places have values of zero on the concentration and diversity measures and are thus coloured in dark blue in these maps.

15-percentage point difference between the low poverty trajectories of *3A/3C* and the high poverty trajectory *1A*. Moreover, the Decennial Census and ACS estimates support these patterns in not only showing a strong link between rural poverty and household structure in 1980, but also significantly larger declines in two-parent household shares among higher poverty trajectories. By the 2018 period, the largest differential between trajectories widened to 24-percentage points (1A vs. 3A).

These patterns are most clearly relevant to concentrated child poverty across places. Decades of sociological research documents lower average rates of attainment among children from female-headed household, due to the increased risk of economic insecurity and deprivation, and stressors associated with family disruption (McLanahan, 1985; Seltzer, 1994). We investigate these patterns indirectly by examining the rate of poverty in mother-only households across our trajectories (Table 3).

Table 3 shows significantly higher rates of poverty in mother-only households, and particularly so for trajectories characterised by high general poverty rates. Column 5 shows that the median rate of poverty for mother-only households in 1980 was 68% for rural

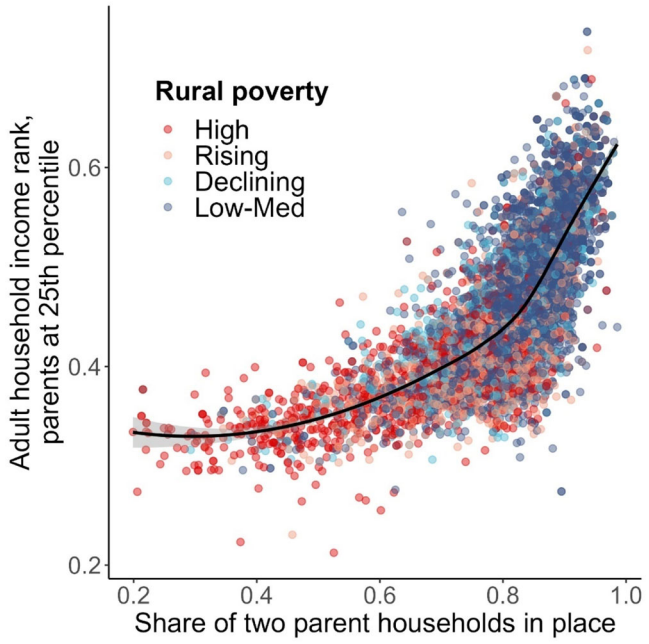

FIGURE 4 The share of two-parent households and income mobility across places. A scatterplot showing the share of two-parent households and the adult household income rank of children born to parents at the 25th percentile across over 8000 rural places. The points (places) are coloured according to their poverty trajectory over the period from 1980 to 2018.

places, approximately five times higher than the rural place-level average (compare Column 2, Table 2). However, the link between household structure and child poverty varies sharply across trajectories. The median poverty rate for mother-only households in 1980 was approximately 80%–84% for high chronic poverty trajectories approximately 20–30 percentage points lower for the low to medium poverty trajectories. Moreover, despite sizeable declines in poverty rates for mother-only households from 1980 to 2018, large disparities persist across the trajectories. In short, we observe that high and rising general poverty levels are closely associated with low and declining rates of two-parent households, and exceptionally high poverty rates in mother-only households. Concentrated child poverty therefore provides an important path through which community and household conditions may affect intergenerational mobility.

Table A1 provides further descriptive statistics on the trajectories. Notably, the high chronic poverty trajectories (1A–1B) have, by a considerable margin, the lowest combined White population shares of all trajectories, and also exhibit low levels and growth in educational attainment. These trajectories and those characterised by rising poverty (2A–2C) also have economic histories of manufacturing dependence. The latter group are distinctive, however, in that their populations are overwhelmingly White, implying that these trajectories align with well-documented patterns of *racialized* rural poverty (*1A–1B*), and also the hardship felt in Whiter communities due to economic decline and deindustrialisation (*2A–2C*). Places with more favourable poverty trajectories tend to be older, Whiter, relatively highly educated, and more likely to be engaged in agriculture.

4.4 | Rural trajectories and intergenerational mobility

We now turn to formally testing whether these place-level trajectories are predictive of the upward income mobility of the children who have grown within these places. Although the factors that shape children's outlooks, perspectives, educations, and ultimately, long-term economic prospects, are far more granular and personal than the trajectories that we describe here, we can test whether these local changes are linked to material shifts in children's outcomes. If this is the case, it would imply that these changing community trajectories may be influencing or inhibiting the forces that generate upward mobility.

Our analysis relies on an ordinary least squares (OLS) regression model of the following form:

$$\text{SocialMobility}_{ij} = \beta_1 \text{Trajectory}_{ij} + \beta_2 \text{TwoParent}_{ij} + \epsilon_i, \quad (1)$$

where the dependent variable SocialMobility_i refers to the adult household income rank of children growing up in place *i* with parents at the 25th percentile of the national income distribution. The main right-hand side variables would be the *Trajectory* followed by place *i*. These estimates would provide an indication of how a given trajectory relates to variation in social mobility outcomes and a significance test of these differences. We add an additional control variable *TwoParent* for the share of children raised in two-parent households. To account for spatial dependence in the data, we cluster the standard errors at the scale of counties *j*.

Figure 5 presents our estimates of the association between trajectories of intergenerational mobility, where the places in *Chronic Poverty A* are referenced using the dotted line. Model 1 presents the uncontrolled OLS estimates of the association between trajectories and intergenerational mobility. As highlighted in the descriptive statistics, there is approximately a 10-point difference in the average income attainment of children from places with low to medium poverty as compared to those with chronic poverty. Furthermore, there are statistically significant differences across all other trajectories.

Model 2 presents the same estimates conditional on the two-parent household share of the place. Adjusting for this variable substantially attenuates the estimated difference in intergenerational mobility outcomes across trajectories. In general, intergenerational mobility differences are estimated to be three- to four-times smaller after adjusting for the two-parent household share. Furthermore, the share of variation explained by these models (adjusted r-squared) increases from 0.19 in the initial model with the trajectories to over 0.53 once we add the single parent household share.

Taken together, these estimates illustrate significant differences in intergenerational mobility based on the poverty trajectories of places. These associations are closely associated with a place's family structure,

TABLE 3 Household structure of places in 2018 by trajectory.

Year	% Raised in two parent households (Opp. Insights) 1990s (1)	% Households with children & two parents present (Census/ACS) 1980 (2)	2018 (3)	1980–2018 (4)	% Mother only households below poverty line (Census/ACS) 1980 (5)	2018 (6)	1980–2018 (7)
All urban places	0.80	0.85	0.67	−0.18	0.53	0.28	−0.25
All rural places	0.83	0.87	0.65	−0.22	0.68	0.37	−0.31
Rural trajectories							
1. High chronic poverty (15.2%)							
1A. Large, stable	0.72	0.78	0.49	−0.29	0.80	0.53	−0.20
1B. Medium, growing	0.79	0.83	0.54	−0.29	0.84	0.45	−0.31
2. Rising poverty (19.7%)							
2A. Small, growing	0.84	0.88	0.59	−0.29	0.68	0.44	−0.17
2B. Large, growing	0.80	0.84	0.55	−0.29	0.67	0.48	−0.18
2C. Large, growing, ageing	0.80	0.84	0.56	−0.28	0.60	0.50	−0.09
3. Low-medium poverty (50.4%)							
3A. Medium, growing, ageing	0.87	0.90	0.73	−0.17	0.50	0.21	−0.15
3B. Large, stable, old	0.85	0.87	0.65	−0.22	0.63	0.33	−0.22
3C. Small, shrinking, old and ageing	0.87	0.89	0.71	−0.18	0.55	0.27	−0.24
3D. Medium, stable, ageing	0.83	0.86	0.64	−0.22	0.63	0.35	−0.18
4. Declining poverty (14.7%)							
4A. Very small, shrinking	0.83	0.87	0.67	−0.20	0.61	0.39	−0.22
4B. Very small, shrinking, ageing	0.81	0.84	0.68	−0.16	1.00	0.36	−0.64

Note: A table showing medians for the share of two parent households, decomposed by trajectory and for urban areas. Columns 1 shows estimates from Opportunity Insights of the proportion of children in the intergenerational mobility sample who are raised in two-parent households. Columns 2–4 show estimates of the share of two parent households with resident children from the 1980 Census, the 2014–2018 American Community Survey, and the change in the median between those two periods. Columns 5–7 shown the share of mother only households that fall below the poverty line from the 1980 Census, the 2014–2018 American Community Survey, and the change in the median between those two periods.

specifically the share of children raised in two-parent households. This is not to say that the poverty trajectories of place are unimportant but rather they are closely linked with variation in household structure and family stability over time and across places, potentially as both causes and effects of local trends in poverty. These findings are consistent with the existing literature showing that indicators of household structure are highly predictive of intergenerational mobility (Chetty et al., 2014; Connor, Hunter, et al., 2023).

5 | ROBUSTNESS AND EXTENSIONS

In arriving at our results, we made several decisions and assumptions regarding our preferred model. In this section, we examine the sensitivity of our results to these decisions as well as potential caveats to our findings. One assumption is that our relationships are general with respect to the children and residents of rural places, rather than driven by heterogeneity in the underlying population. In Table A2, we show that our findings are robust to the use of personal or household incomes and are consistent for males and females.[8] Table A3 runs these analyses separately for children from White, Black, and Hispanic households. We find that the differences across trajectories are largest among Whites, clarifying that our results are not being driven by differences in outcomes between children of different races. Furthermore, for each racial group separately, we find similar results across trajectories, with two-parent household shares having large effects in each instance. Furthermore, our results are very similar irrespective of whether we focus on children who left or stayed in their childhood areas (Table A4).

We also demonstrate the robustness of our results to the following concerns: alternate definitions of rurality based on counties rather than places; small counts of rural children in the Opportunity

[8]We do so in response to recent findings of large rural gender-based disparities that appear in personal income measures but not for household incomes (see Connor, Hunter, et al., 2023).

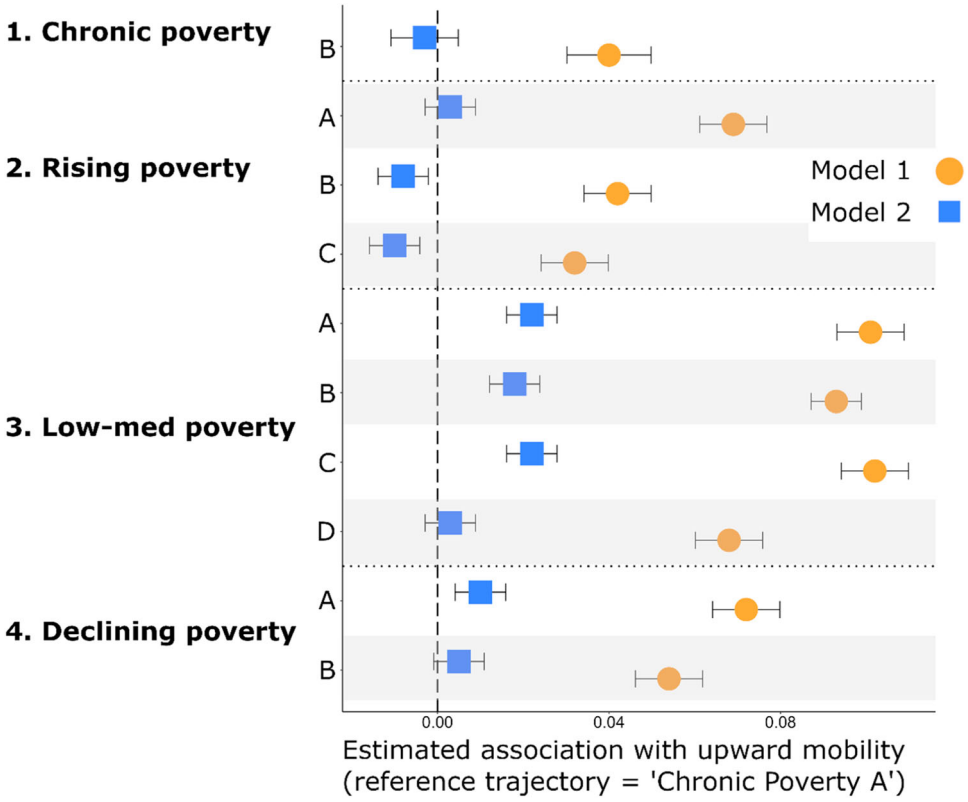

FIGURE 5 Multilevel regression of social mobility on rural trajectories. Point graph showing regression estimates with 95% confidence intervals of the association of 11 rural trajectories with preferred social mobility measure. The social mobility measure is based on average adult household income of children from households at the 25th percentile of children from rural places within different trajectories. Model 1 is based on estimates from the ordinary least squares regression model with no additional covariates. Model 2 includes adjusts for the share of children raised in two-parent households at the place scale. Standard errors are clustered at the county scale. The reference category is places that are in the trajectory 1. Chronic Poverty: A.

Insights data; changes in the spatial extent of places over time; the presence of nonplace populations within counties; places with very small total populations; and high margins of error in place-level poverty estimates (Tables A5–A7).

Despite the general robustness of our findings, two of these points are worthy of further note. First, Table A6 shows that the exclusion of places with high margins of error from our analysis widens the estimated disparities in intergenerational mobility across trajectories. This is most likely because the noise introduced by sampling error and small places downwardly biases our estimates. Worded differently, the nature of ACS sampling is likely leading to an underestimation of the association between intergenerational mobility and exposure to community trajectories.

Second, Table A7 shows that places with high and rising poverty are substantially more likely to be in counties with larger populations who reside outside of places, populations who are therefore not captured in our analysis. If we were to assume a degree similarity in the experiences of households who reside in and outside of places within the same county, it may be the case that we are underrepresenting rural populations who have experienced curtailed intergenerational mobility. However, this is an issue that requires its own targeted investigation.

6 | POLICIES FOR PLACES

Our findings document that entrenched community poverty is predictive of low rates of intergenerational mobility, partly through its connection to concentrated family instability and child poverty. This raises the question of what kinds of interventions could help address these challenges. Although a range of policy approaches could work well in combination, we contend that policies which target places of residence, or 'place-based policies', may prove to be particularly efficacious.

There is a compelling case for creating policies that explicitly aim to improve conditions in struggling and left behind rural places. Most notably, evidence indicates that social problems are increasingly linked to the absence of employment rather than a lack of income, and job creation is most efficiently achieved through a focus on places and regions rather than individuals (Austin et al., 2018). Moreover, place-based interventions that aim to stimulate employment tend to have their largest effects when targeted toward depressed areas (Bartik, 2020; Partridge & Rickman, 2007). The potential positive impact of such programmes are evident in evaluations of the federal Empowerment Zone programmes and in post-Katrina rebuilding efforts (Busso et al., 2013; Fu &

Gregory, 2019). There are therefore strong social and economic justifications for stimulating employment in struggling rural communities.[9]

Economic development policies would also conceivably improve conditions for families and children. Studies of household and marital stability show that economic considerations strongly influence marital behaviour in adulthood (Zhang & Sassler, 2023). This is supported by findings that document rising rates of single parent households and child poverty and declining intergenerational mobility in regions that have experienced major disruptions to male-dominated employment (Autor et al., 2019; Connor & Storper, 2020). Lichter et al. (2020) has thus argued that 'promoting good jobs may ultimately be the best marriage promotion policy'. Whether or not marriage is the objective, place-based development policies do hold the potential to improve household conditions and reduce child poverty.

Local economic development policy should also aim to foster human capital for the rural youth. For younger adults, upskilling, workforce training and general education would be valuable, particular in places with declining economic bases (Goetz et al., 2018). In terms of education and child development, we can continue to learn from findings on the causal spatial determinants of intergenerational mobility (Chetty, 2021; Connor, Hunter, et al., 2023). The historical record suggests that supportive childhood environments are both a cause and effect of place-based prosperity.

At present, there are numerous ambitious and credible proposals for place-based development policy. The Biden-Harris Administration has committed to investing in high-speed internet, clean drinking water and critical infrastructure (e.g., healthcare, education) for rural communities (The White House, 2024). Other proposals include stimulating rural entrepreneurship and employment through enhanced financial infrastructure and the strategic relocation of federal jobs (Han et al., 2023; Ziliak, 2019), promoting agrotourism (Schmidt et al., 2023), and using place-based tax incentives to reduce spatial inequality (Layser, 2020). These programmes will likely have different time horizons over which we might expect to see an impact.

Place-based policies also tend to work better when they are 'place sensitive'. This involves a departure from a one-size-fits-all approach (Theodos, 2021), toward approaches that respond to the structural opportunities, and potential and constraints of each place (Iammarino et al., 2017; Rodríguez-Pose, 2018). With respect to social conditions, a straightforward example would be to respond to the distribution of risk factors across communities and regions. For example, Partridge and Rickman (2007) note that the Mississippi Delta and Rio Grande regions are characterised by high shares of single parent households, noting that these regions stand to benefit considerably from expanded support for working mothers, including flexible childcare, better transportation, and training programmes. The challenges facing other rural regions may require their own solutions. See Brooks and Clark (2024) for a recent review of the persistence of early family formation in rural communities.

As a cautionary note, place-based policy will not work everywhere and may in some circumstances be inefficient. However, while place-based programmes can be expensive and inefficient (Glaeser & Gottlieb, 2008; Neumark & Simpson, 2015), there is a growing case that by focusing on poorer people *and* poorer places in combination, the gains in terms of spatial equity will outweigh the inefficiencies (Gaubert et al., 2021). As Gaubert et al. (2021) argue 'when living in poor areas signals disadvantage over and above one's own income, the case for place-based redistribution as a supplement to progressive income taxation is only strengthened' (p. 41). That is, place-based redistribution can play an important role in ameliorating the additional disadvantages facing poorer households in poor places.

Nonetheless, as rural places may lack the size and fundamentals to take advantage of place-based programmes, there is need to consider other strategies (Ziliak, 2019). In situations where implementing place-based policies seems impractical, an alternative approach could involve facilitating migration to jobs, often referred to as 'movement to opportunity' (Bastian & Black, 2022; Katz et al., 2001; Ziliak, 2019).[10] Such moves could be incentivized through relocation expenses that offset the costs of moving, as well as wage subsidies to reduce uncertainties that might otherwise discourage migration (Ziliak, 2019). Such interventions already have a history of success, including the Industrial Removal Office (Abramitzky et al., 2024) and recent neighbourhood mobility programmes (Chetty et al., 2016; Chetty, DeLuca, et al., 2018).[11]

Incentivized and more structured migration could prove to be particularly effective in the rural case. This is because the existing observational evidence indicates that the rural youths who move from distressed rural communities to large urban regions tend not to be the people with the greatest need (Carr & Kefalas, 2009; Foulkes & Newbold, 2008; Lee et al., 2018). Furthermore, those who are most in need make up a disproportionate share of the migrants to other distressed places, leading to a reconcentration of rural poverty (Fitchen, 1994, 1995; Foulkes & Newbold, 2005; Lichter et al., 2022). Current rural migration dynamics therefore have a greater tendency to exacerbate spatial disparities in intergenerational mobility and further entrench rural poverty.

Finally, there is a strong case for generally providing more support for families. The United States is an outlier in both its low rate of children living with married parents (Kearney, 2023) and the unusually high penalties it places on single parenthood and low levels of education (Brady et al., 2018). This is evident from the findings of comparative studies which show that mothers and children fare better in countries that provide larger cash transfers and tax credits for children, subsidised childcare and health care, and paid parental

[9]We are also now in a situation where inequality is rising across regions and migration is stagnant, meaning that disparities across regions are unlikely to self-correct (Connor, Kemeny, et al., 2023; Cooke, 2011)

[10]Migration has been shown to be a particularly important strategy for the intergenerational mobility of children from poor regions (Anstreicher, 2024; Li et al., 2018; Parker et al., 2022).

[11]Such programmes could prove to be especially important given rising inequality across regions and the stagnation of interregional migration (Connor, Kemeny, et al., 2023; Cooke, 2011)

leave (Brady et al., 2017). These claims are supported by US-based findings that federal- and state-level investments are associated with improved child development outcomes, partly by reducing child poverty and enabling mothers to spend more time with their children (Jackson et al., 2023; Shaefer & Edin, 2013). Thus, even beyond place-based policies, welfare-enhancing policies could ameliorate the penalties associated with low education levels and single parenthood, thereby improving intergenerational mobility for children from struggling rural places.

7 | CONCLUSION

Rural America is often depicted as a distressed and left-behind place, where children face a challenging environment for economic mobility. This paper examines these claims by constructing a new database that describes the changing conditions of all rural places in the lower 48 states over the past four decades and the intergenerational mobility outcomes of the children who grew up in these places over that period. We use this database to describe the dominant trajectories of rural community change and to assess the link between these trajectories and children's long-term outcomes. To account for family income differences across places, we confine our focus to children growing up in low-income households.

Our analysis presents a highly differentiated picture with respect to community change and rural intergenerational mobility. We document four dominant trajectories of community poverty: chronic high poverty; rising poverty; low to medium poverty; declining poverty. These trajectories are concentrated in specific regions of the country and are linked to longer-term patterns of racial inequality and to more recent experiences of industrial decline. Our findings thus confirm the great diversity of experiences that prevail across rural communities in the United States.

We also show that these community trajectories are predictive of intergenerational mobility levels, with chronic and rising poverty being associated with significantly lower rates of intergenerational mobility. This means that among children growing up in poor households in the United States, the trajectories identified here provide direct signals of the additional disadvantage associated with growing up in a poor place. Our work thus provides support for using these sequencing and trajectory-based methods for identifying neighbourhood effects. Furthermore, the specific patterns documented in this study also suggest that hardship experienced by segments of rural America is likely one of the contributing factors to the broader stagnation of intergenerational mobility in the United States (Connor & Storper, 2020).

Our analysis provides analytic novelty in its utilisation of spatial sequencing approaches and by applying them, for the first time, to study rural dynamics. To do this, we draw on advances from the field of GIScience and apply them to longitudinal observations on rural places. Our focus on places departs from the standard practice in the literature, which emphasises county-level dynamics. The advantages to focusing on places is in its ability to capture intracounty dynamics. However, we also observe that much of the variation in community trajectories and intergenerational mobility can be explained by differences between counties located across the country, rather than among places within them. In developing the analytic framework presented here, we encourage further investigation that integrates rural dynamics at the scale of both places and counties.

We show that family instability is one of the reasons that these poverty trajectories are predictive of intergenerational mobility. Over recent decades, the share of children living with married parents has dramatically declined outside of the college-educated class (Kearney, 2023). This trend is associated with heightened social inequality in poverty (Garfinkel & McLanahan, 1986; Thiede et al., 2017) and, as we show, the transmission of poverty across generations. Efforts to improve intergenerational mobility in rural America or beyond, thus need to take these household and family dynamics seriously.

We conclude our analysis with a discussion of the merits of place-based development policy for rural children. The intergenerational nature of the process requires a long-time horizon, but both people- and place-based policies have a role to play. Conditions could generally be improved for children growing up in poverty through expansions of the social safety net, which would disproportionately improve conditions for the residents of poor regions. However, jobs are key to both community social and economic dynamics. We agree with a growing consensus that economic development policy that targets and plays to strengths of distressed regions could have long-lasting effects for intergenerational mobility and community wellbeing more generally.

ACKNOWLEDGEMENTS

Partial funding has been provided through the Eunice Kennedy Shriver National Institute of Child Health and Human Development of the National Institutes of Health under award numbers R21 HD098717 01A1 and P2CHD066613. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. Partial funding for this work was also provided through the Humans, Disasters and the Built Environment programme of the National Science Foundation, award number 1924670. This work benefited from suggestions from the audience of the Demography Workshop at the University of Chicago, the 2021 meeting of the Population Association of America, the Spatial Analysis and Data (SAD) Seminar, and the Department of Math and Statistics at Maynooth University, the Centre for Studies in Demography and Ecology at the University of Washington, and the Global Conference on Economic Geography in Dublin.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ORCID

Dylan S. Connor http://orcid.org/0000-0002-8988-170X

REFERENCES

Abramitzky, R., Boustan, L. P., & Connor, D. (2024). Leaving the enclave: Historical evidence on immigrant mobility from the industrial removal office. *Journal of Economic History*, *84*(2), 352–394. https://doi.org/10.3386/w27372

Anstreicher, G. (2024). Spatial influences in upward mobility. *Journal of Political Economy*, *132*(1), 149–199. https://doi.org/10.1086/725706

Aurenhammer, F. (1991). Voronoi diagrams–a survey of a fundamental geometric data structure. *ACM Computing Surveys*, *23*(3), 345–405. https://doi.org/10.1145/116873.116880

Austin, B. A., Glaeser, E. L., & Summers, L. H. (2018). *Jobs for the Heartland: Place-based policies in 21st century America* (Brookings Papers on Economic Activity). Brooking Institute. https://www.jstor.org/stable/26506216

Autor, D. (2019). *Work of the past, work of the future*. National Bureau of Economic Research.

Autor, D., Dorn, D., & Hanson, G. (2019). When work disappears: Manufacturing decline and the falling marriage market value of young men. *American Economic Review: Insights*, *1*(2), 161–178.

Bartik, T. J. (2020). Using place-based jobs policies to help distressed communities. *Journal of Economic Perspectives*, *34*(3), 99–127.

Bastian, J., & Black, D. (2022). Overcoming financial constraints and migrating out of rural and distressed America. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4166950

Borjas, G. J. (1987). Self-selection and the earnings of immigrants. *The American Economic Review*, *77*(4), 531–553.

Brady, D., Finnigan, R. M., & Hübgen, S. (2017). Rethinking the risks of poverty: A framework for analyzing prevalences and penalties. *American Journal of Sociology*, *123*(3), 740–786. https://doi.org/10.1086/693678

Brady, D., Finnigan, R. M., & Hübgen, S. (2018, February 10). Opinion | Single mothers are not the problem. *The New York Times*. https://www.nytimes.com/2018/02/10/opinion/sunday/single-mothers-poverty.html

Brooks, M. M., & Clark, S. (2024). Early family formation, selective migration, and childhood conditions in rural America*. *Rural Sociology*. https://doi.org/10.1111/ruso.12541

Brum-Bastos, V. S., Long, J. A., & Demšar, U. (2018). Weather effects on human mobility: A study using multi-channel sequence analysis. *Computers, Environment and Urban Systems*, *71*, 131–152.

Busso, M., Gregory, J., & Kline, P. (2013). Assessing the incidence and efficiency of a prominent place based policy. *American Economic Review*, *103*(2), 897–947.

Carr, P. J., & Kefalas, M. J. (2009). *Hollowing out the middle: The rural brain drain and what it means for America*. Beacon Press.

Census Bureau. (1994). *Geographic Areas Reference Manual (GARM)*. US Department of Commerce, Bureau of the Census.

Chetty, R. (2021). Improving equality of opportunity: New insights from big data. *Contemporary Economic Policy*, *39*(1), 7–41.

Chetty, R., DeLuca, S., Katz, L. F., & Palmer, C. (2018). *Creating moves to opportunity in seattle and king county randomized controlled trial pre-analysis plan*. https://www.socialscienceregistry.org/rails/active_storage/blobs/eyJfcmFpbHMiOnsibWVzc2FnZSI6IkJBaHBBam9qIiwiZXhwIjpudWxsLCJwdXIiOiJibG9iX2lkIn19–2ba2b662dcc18ba239960625413925391ec2d50f/preanalysis_plan_v8.pdf

Chetty, R., Friedman, J. N., Hendren, N., Jones, M. R., & Porter, S. R. (2018). *The opportunity atlas: Mapping the childhood roots of social mobility*. National Bureau of Economic Research.

Chetty, R., Grusky, D., Hell, M., Hendren, N., Manduca, R., & Narang, J. (2017). The fading American dream: Trends in absolute income mobility since 1940. *Science*, *356*(6336), 398–406.

Chetty, R., Hendren, N., & Katz, L. F. (2016). The effects of exposure to better neighborhoods on children: New evidence from the moving to opportunity experiment. *American Economic Review*, *106*(4), 855–902.

Chetty, R., Hendren, N., Kline, P., & Saez, E. (2014). Where is the land of opportunity? The geography of intergenerational mobility in the United States. *The Quarterly Journal of Economics*, *129*(4), 1553–1623.

Connor, D. S. (2019). The cream of the crop? Geography, networks and Irish migrant selection in the age of mass migration. *The Journal of Economic History*, *79*(1), 139–175. https://escholarship.org/uc/item/9h1331j3

Connor, D. S., Berg, A., Kemeny, T., & Kedron, P. (2023). Who gets left behind by left behind places? *Cambridge Journal of Regions, Economy and Society*, *17*, 37–58.

Connor, D. S., Berg, A. K., Kemeny, T., & Kedron, P. J. (2024). Who gets left behind by left behind places? *Cambridge Journal of Regions, Economy and Society*, *17*(1), 37–58.

Connor, D. S., Gutmann, M. P., Cunningham, A. R., Clement, K. K., & Leyk, S. (2019). How entrenched is the spatial structure of inequality in cities? Evidence from the integration of census and housing data for Denver from 1940 to 2016. *Annals of the American Association of Geographers*, *110*(4), 1022–1039.

Connor, D. S., Hunter, L., Jang, J., & Uhl, J. H. (2023). Family, community, and the rural social mobility advantage. *Research in Social Stratification and Mobility*, *87*, 100844.

Connor, D. S., Kemeny, T., & Storper, M. (2023). Frontier workers and the seedbeds of inequality and prosperity. *Journal of Economic Geography*, *24*(3), 393–414.

Connor, D. S., & Storper, M. (2020). The changing geography of social mobility in the United States. *Proceedings of the National Academy of Sciences*, *117*(48), 30309–30317.

Cooke, T. J. (2011). It is not just the economy: Declining migration and the rise of secular rootedness. *Population, Space and Place*, *17*(3), 193–203.

Cosby, A. G., McDoom-Echebiri, M. M., James, W., Khandekar, H., Brown, W., & Hanna, H. L. (2019). Growth and persistence of place-based mortality in the United States: The rural mortality penalty. *American Journal of Public Health*, *109*(1), 155–162.

Cromartie, J. (2020). Demographic components of aging in the nonmetropolitan US, 1980–2017. In Glick, J., McHale, S., King, V. (Eds.), *Rural families and communities in the United States* (Vol. 10). National Symposium on Family Issues. https://doi.org/10.1007/978-3-030-37689-5_6

Delmelle, E. C. (2015). Five decades of neighborhood classifications and their transitions: A comparison of four US cities, 1970–2010. *Applied Geography*, *57*, 1–11.

Delmelle, E. C. (2016). Mapping the DNA of urban neighborhoods: Clustering longitudinal sequences of neighborhood socioeconomic change. *Annals of the American Association of Geographers*, *106*(1), 36–56.

Delmelle, E. C. (2017). Differentiating pathways of neighborhood change in 50 US metropolitan areas. *Environment and Planning A*, *49*, 2402–2424.

Delmelle, E. C. (2019). The increasing sociospatial fragmentation of urban America. *Urban Science*, *3*(1), 9.

Dias, F., & Silver, D. (2021). Neighborhood dynamics with unharmonized longitudinal data. *Geographical Analysis*, *53*(2), 170–191.

Fitchen, J. M. (1994). Residential mobility among the rural poor. *Rural Sociology*, *59*(3), 416–436. https://doi.org/10.1111/j.1549-0831.1994.tb00540.x

Fitchen, J. M. (1995). Spatial redistribution of poverty through migration of poor people to depressed rural communities. *Rural Sociology*, *60*(2), 181–201. https://doi.org/10.1111/j.1549-0831.1995.tb00568.x

Foulkes, M., & Newbold, K. B. (2005). Geographic mobility and residential instability in impoverished rural Illinois places. *Environment and Planning A: Economy and Space*, *37*(5), 845–860. https://doi.org/10.1068/a34211

Foulkes, M., & Newbold, K. B. (2008). Poverty catchments: Migration, residential mobility, and population turnover in impoverished rural Illinois communities. *Rural Sociology*, *73*(3), 440–462. https://doi.org/10.1526/003601108785766525

Fu, C., & Gregory, J. (2019). Estimation of an equilibrium model with externalities: Post-disaster neighborhood rebuilding. *Econometrica*, *87*(2), 387–421. https://doi.org/10.3982/ECTA14246

Fuguitt, G. V. (1965). The growth and decline of small towns as a probability process. *American Sociological Review*, *30*(3), 403–411.

Fuguitt, G. V. (1971). The places left behind: Population trends and policy for rural America. *Rural Sociology*, *36*(4), 449.

Gabadinho, A., Ritschard, G., Müller, N. S., & Studer, M. (2011). Analyzing and visualizing state sequences in R with TraMineR. *Journal of Statistical Software*, *40*(4), 1–37.

Gabadinho, A., Ritschard, G., Studer, M., & Müller, N. S. (2009). *Mining sequence data in R with the TraMineR package: A user's guide*. Department of Econometrics and Laboratory of Demography, University of Geneva.

Garfinkel, I., & McLanahan, S. (1986). *Single mothers and their children: A new American dilemma*. Urban Institute Press Washington. http://archive.wilsonquarterly.com/sites/default/files/articles/WQ_VOL11_SU_1987_Research.pdf

Gaubert, C., Kline, P., Vergara, D., & Yagan, D. (2021). Trends in US spatial inequality: Concentrating affluence and a democratization of poverty. *AEA Papers and Proceedings*, *111*, 520–525.

Gauthier, J.-A., Widmer, E. D., Bucher, P., & Notredame, C. (2010). 1. Multichannel sequence analysis applied to social science data. *Sociological Methodology*, *40*(1), 1–38.

Glaeser, E. L., & Gottlieb, J. D. (2008). *The economics of place-making policies*. National Bureau of Economic Research. https://www.nber.org/papers/w14373

Goetz, S. J., Partridge, M. D., & Stephens, H. M. (2018). The economic status of rural America in the President Trump era and beyond. *Applied Economic Perspectives and Policy*, *40*(1), 97–118.

González-Leonardo, M., Newsham, N., & Rowe, F. (2023). Understanding population decline trajectories in Spain using sequence analysis. *Geographical Analysis*, *55*, 495–516.

Goodchild, M. F., Anselin, L., & Deichmann, U. (1993). A framework for the areal interpolation of socioeconomic data. *Environment and Planning A: Economy and Space*, *25*(3), 383–397.

Gyourko, J., Mayer, C., & Sinai, T. (2013). Superstar cities. *American Economic Journal: Economic Policy*, *5*(4), 167–199.

Han, L., Pan, Y., Goetz, S. J., & Rupasingha, A. (2023). *Impact of community reinvestment act on minority and female employment growth*. https://ageconsearch.umn.edu/record/335703/files/26286.pdf

Hartigan, J. A., & Wong, M. A. (1979). Algorithm AS 136: A k-means clustering algorithm. *Journal of the Royal Statistical Society. Series C (Applied Statistics)*, *28*(1), 100–108.

Hean, O., & Partridge, M. D. (2022). The impact of metropolitan technology on the non-metropolitan labour market: Evidence from US patents. *Regional Studies*, *56*(3), 476–488.

Houlden, V., Robinson, C., Franklin, R. S., Rowe, F., & Pike, A. (2022). *Locating "Left Behind" places and people in England: Scale, trajectory, and the challenge of multidimensionality*. OSF Preprints.

Hunter, L. M., Talbot, C. B., Connor, D. S., Counterman, M., Uhl, J. H., Gutmann, M. P., & Leyk, S. (2020). Change in US small town community capitals, 1980–2010. *Population Research and Policy Review*, *39*, 913–910.

Iammarino, S., Rodríguez-Pose, A., & Storper, M. (2017). *Why regional development matters for Europe's economic future*. European Commission Directorate General for Regional and Urban Policy Working Paper, 7.

Jackson, M., Song, H., & Kalil, A. (2023). State-level safety net spending and educational gaps in maternal time with children. *Journal of Marriage and Family*, *86*, 412–432. https://doi.org/10.1111/jomf.12960

Johnson, K. M., & Lichter, D. T. (2019). Rural depopulation: Growth and decline processes over the past century. *Rural Sociology*, *84*(1), 3–27.

Jung, P. H., & Song, J. (2022). Multivariate neighborhood trajectory analysis: An exploration of the functional data analysis approach. *Geographical Analysis*, *54*(4), 789–819.

Katz, L. F., Kling, J. R., & Liebman, J. B. (2001). Moving to opportunity in Boston: Early results of a randomized mobility experiment. *The Quarterly Journal of Economics*, *116*(2), 607–654.

Kearney, M. S. (2023). *The two-parent privilege: How Americans stopped getting married and started falling behind*. University of Chicago Press.

Kemeny, T., & Storper, M. (2020). Superstar cities and left-behind places: Disruptive innovation, labor demand, and interregional Inequality. *LSE International Inequalities Institute Working Paper #41*.

Knaap, E. (2022). The spatial analysis of gentrification: Formalizing geography in models of a multidimensional urban process. In R. Sergio, & F. Rachel (Eds.). *Handbook of spatial analysis in the social sciences* (pp. 384–399). Edward Elgar Publishing. https://www.e-elgar.com/shop/usd/handbook-of-spatial-analysis-in-the-social-sciences-9781789903935.html

Krause, E., & Reeves, R. V. (2017). *Rural dreams: Upward mobility in America's countryside*. Brookings Institute.

Lan, Y., Delmelle, E., & Delmelle, E. (2021). NDS: An interactive, web-based system to visualize urban neighborhood dynamics in United States. *Journal of Maps*, *17*(1), 62–70.

Layser, M. D. (2020). How place-based tax incentives can reduce geographic inequality. *Tax Law Review*, *74*, 1.

LeBeau, K. (2023). A guide to the American Community Survey (ACS) for the rural researcher: Unpacking the conceptual and technical aspects of using secondary data for rural research. *Rural Sociology*, *88*(3), 791–817. https://doi.org/10.1111/ruso.12493

Lee, N., Morris, K., & Kemeny, T. (2018). Immobility and the Brexit vote. *Cambridge Journal of Regions, Economy and Society*, *11*(1), 143–163.

Li, M., Goetz, S. J., & Weber, B. (2018). Human capital and inter-generational mobility in US counties. *Economic Development Quarterly*, *32*(1), 18–28.

Li, Y., & Xie, Y. (2018). A new urban typology model adapting data mining analytics to examine dominant trajectories of neighborhood change: A case of Metro Detroit. *Annals of the American Association of Geographers*, *108*, 1313–1337.

Lichter, D. T., & Brown, D. L. (2011). Rural America in an urban society: Changing spatial and social boundaries. *Annual Review of Sociology*, *37*, 565–592.

Lichter, D. T., Brown, D. L., & Parisi, D. (2021). The rural–urban interface: Rural and small town growth at the metropolitan fringe. *Population, Space and Place*, *27*(3), e2415.

Lichter, D. T., & Johnson, K. M. (2021). Opportunity and place: Latino children and America's future. *The Annals of the American Academy of Political and Social Science*, *696*(1), 20–45.

Lichter, D. T., Parisi, D., & Taquino, M. C. (2022). Inter-county migration and the spatial concentration of poverty: Comparing metro and nonmetro patterns. *Rural Sociology*, *87*(1), 119–143.

Lichter, D. T., Price, J. P., & Swigert, J. M. (2020). Mismatches in the marriage market. *Journal of Marriage and Family*, *82*(2), 796–809. https://doi.org/10.1111/jomf.12603

Manson, S., Schroeder, J., Van Riper, D., & Ruggles, S. (2017). *Ipums National Historical Geographic Information System: Version 12.0 [database]* (Vol. 39). University of Minnesota.

McLanahan, S. (1985). Family structure and the reproduction of poverty. *American Journal of Sociology*, *90*(4), 873–901. https://doi.org/10.1086/228148

Morgan, S. P., McDaniel, A., Miller, A. T., & Preston, S. H. (1993). Racial differences in household and family structure at the turn of the century. *American Journal of Sociology*, *98*(4), 799–828. https://doi.org/10.1086/230090

National Academies of Sciences & Medicine. (2022). *Research and data priorities for improving economic and social mobility: Proceedings of a workshop*. https://nap.nationalacademies.org/catalog/26598/research-and-data-priorities-for-improving-economic-and-social-mobility

Neumark, D., & Simpson, H. (2015). Place-based policies. *Handbook of Regional and Urban Economics*, *5*, 1197–1287. https://www.sciencedirect.com/science/article/pii/B9780444595317000181

Newsham, N., & Rowe, F. (2023). Understanding trajectories of population decline across rural and urban Europe: A sequence analysis. *Population, Space and Place*, *29*(3), e2630. https://doi.org/10.1002/psp.2630

Olson, A. W., Zhang, K., Calderon-Figueroa, F., Yakubov, R., Sanner, S., Silver, D., & Arribas-Bel, D. (2021). Classification and regression via integer optimization for neighborhood change. *Geographical Analysis*, *53*(2), 192–212.

Park, G., & Xu, Z. (2020). Spatial and temporal dynamics of social vulnerability in the United States from 1970 to 2010: A county trajectory analysis. *International Journal of Applied Geospatial Research*, *11*(1), 36–54.

Park, R., & Burgess, E. (1925). *The city*. University of Chicago Press.

Parker, E., Tach, L., & Robertson, C. (2022). Do federal place-based policies improve economic opportunity in rural communities? *RSF: The Russell Sage Foundation Journal of the Social Sciences*, *8*(4), 125–154.

Partridge, M. D., & Rickman, D. S. (2007). Persistent pockets of extreme American poverty and job growth: Is there a place-based policy role? *Journal of Agricultural and Resource Economics*, *32*, 201–224.

Patias, N., Rowe, F., & Arribas-Bel, D. (2022). Trajectories of neighbourhood inequality in Britain: Unpacking inter-regional socioeconomic imbalances, 1971–2011. *The Geographical Journal*, *188*(2), 150–165.

Le Petit-Guerin, M., Velthuis, S., Royer, J., Cauchi-Duval, N., Franklin, R., Leibert, T., MacKinnon, D., & Pike, A. (2023). *Lost in transition? Trajectories of regional 'left-behindness' in the EU15 from 1982 to 2017*. https://research.ncl.ac.uk/beyondleftbehindplaces/publicationsanddownloads/Trajectories%20analysis_working%20paper%200423.pdf

Rees, P. H. (1969). The factorial ecology of Calcutta. *American Journal of Sociology*, *74*(5), 445–491.

Rodríguez-Pose, A. (2018). The revenge of the places that don't matter (and what to do about it). *Cambridge Journal of Regions, Economy and Society*, *11*(1), 189–209.

Ruther, M., Leyk, S., & Buttenfield, B. P. (2015). Comparing the effects of an NLCD-derived dasymetric refinement on estimation accuracies for multiple areal interpolation methods. *GIScience & Remote Sensing*, *52*(2), 158–178.

Sampson, R. J. (2012). *Great American city: Chicago and the enduring neighborhood effect*. University of Chicago Press.

Sampson, R. J. (2018). Neighbourhood effects and beyond: Explaining the paradoxes of inequality in the changing American metropolis. *Urban Studies*, *56*, 3–32.

Schmidt, C., Han, L., Khaleghi Moghadam, A., & Goetz, S. J. (2023). *Impact of broadband adoption on agritourism operations in the United States*. https://ageconsearch.umn.edu/record/335731/files/25926.pdf

Seltzer, J. A. (1994). Consequences of marital dissolution for children. *Annual Review of Sociology*, *20*(1), 235–266. https://doi.org/10.1146/annurev.so.20.080194.001315

Shaefer, H. L., & Edin, K. (2013). Rising extreme poverty in the United States and the response of federal means-tested transfer programs. *Social Service Review*, *87*(2), 250–268. https://doi.org/10.1086/671012

Shevky, E., & Bell, W. (1955). *Social area analysis; theory, illustrative application and computational procedures*. Stanford University Press.

Silver, D., & Silva, T. H. (2021). A Markov model of urban evolution: Neighbourhood change as a complex process. *PLoS One*, *16*(1), e0245357.

Slack, T., & Jensen, L. (2020). *The changing demography of rural and small-town America*. Springer.

Spielman, S. E., Folch, D., & Nagle, N. (2014). Patterns and causes of uncertainty in the American Community Survey. *Applied Geography*, *46*, 147–157.

Theodos, B. (2021). *Examining the assumptions behind place-based programs*. Urban Institute. https://www.urban.org/sites/default/files/publication/104334/examining-the-assumptions-behind-place-based-programs2.pdf

The White House. (2024). *FACT SHEET: Biden-Harris Administration launches investing in rural America regional event series to highlight how the president is delivering for rural communities*. The White House. https://www.whitehouse.gov/briefing-room/statements-releases/2024/02/21/fact-sheet-biden-harris-administration-launches-investing-in-rural-america-regional-event-series-to-highlight-how-the-president-is-delivering-for-rural-communities/

Thiede, B. C., Kim, H., & Slack, T. (2017). Marriage, work, and racial inequalities in poverty: Evidence from the United States. *Journal of Marriage and Family*, *79*(5), 1241–1257. https://doi.org/10.1111/jomf.12427

Thorndike, R. L. (1953). Who belongs in the family? *Psychometrika*, *18*(4), 267–276.

Uhl, J. H., Connor, D. S., Leyk, S., & Braswell, A. E. (2021). A century of decoupling size and structure of urban spaces in the United States. *Communications Earth & Environment*, *2*(1), 1–14.

Uhl, J. H., Hunter, L. M., Leyk, S., Connor, D. S., Nieves, J. J., Hester, C., Talbot, C. & Gutmann, M. (2023). Place-level urban-rural indices for the United States from 1930 to 2018. *Landscape and Urban Planning*, *236*, 104762. https://doi.org/10.1016/j.landurbplan.2023.104762

Vogiazides, L., & Mondani, H. (2023). Neighbourhood trajectories in Stockholm: Investigating the role of mobility and in situ change. *Applied Geography*, *150*, 102823.

Weber, B., Fannin, J. M., Miller, K., & Goetz, S. (2018). Intergenerational mobility of low-income youth in metropolitan and non-metropolitan America: A spatial analysis. *Regional Science Policy & Practice*, *10*(2), 87–101.

Wei, F., & Knox, P. L. (2014). Neighborhood change in metropolitan America, 1990 to 2010. *Urban Affairs Review*, *50*(4), 459–489.

Wimberley, R. C., & Morris, L. V. (2002). The regionalization of poverty: Assistance for the Black Belt South? *Journal of Rural Social Sciences*, *18*(1), 11.

Xie, S., Zhang, W., Zhao, Y., & Tong, D. (2022). Extracting land use change patterns of rural town settlements with sequence alignment method. *Land*, *11*(2), 313.

Zhang, X., & Sassler, S. (2023). Opting out of marriage? Factors predicting non-marriage by midlife across race, ethnicity, and gender. *Social Currents*, *10*(5), 403–428. https://doi.org/10.1177/23294965221142769

Ziliak, J. (2019). Restoring economic opportunity for 'The People Left Behind': Employment strategies for rural America. In M. Kearney and A. Ganz (Eds.). *Expanding economic opportunity for more Americans: Bipartisan policies to increase work, wages, and skills* (pp. 100–126). Aspen Institute.

Zwiers, M., Kleinhans, R., & Van Ham, M. (2017). The path-dependency of low-income neighbourhood trajectories: An approach for analysing neighbourhood change. *Applied Spatial Analysis and Policy*, *10*(3), 363–380.

How to cite this article: Connor, D. S., Xie, S., Uhl, J. H., Talbot, C., Hester, C., Jaworski, T., Gutmann, M., Leyk, S., & Hunter, L. (2024). SpatialSpatial poverty dynamics and social mobility in rural America. *Population, Space and Place*; e2802. https://doi.org/10.1002/psp.2802

APPENDIX A

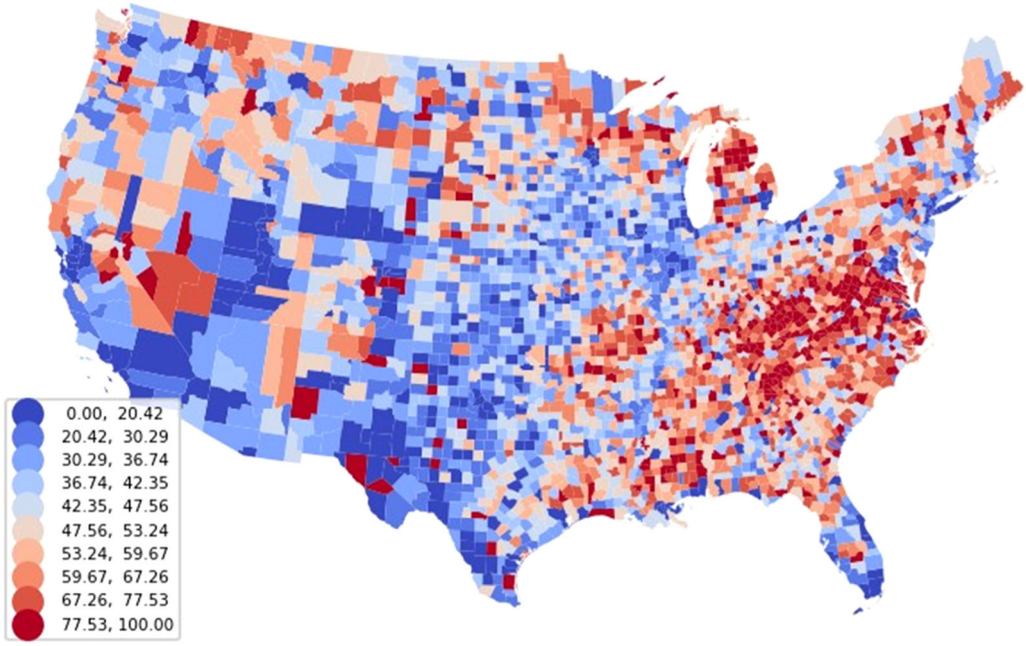

FIGURE A1 Map of the proportion of residents residing outside of incorporated and census designated places in 1980. A map showing the share of the population of each county that resides outside of incorporated or census designated places. This proportion is calculated through the comparison of the sum of the total population for all places within a county against the total population of the county reported in the 1980 decennial census.

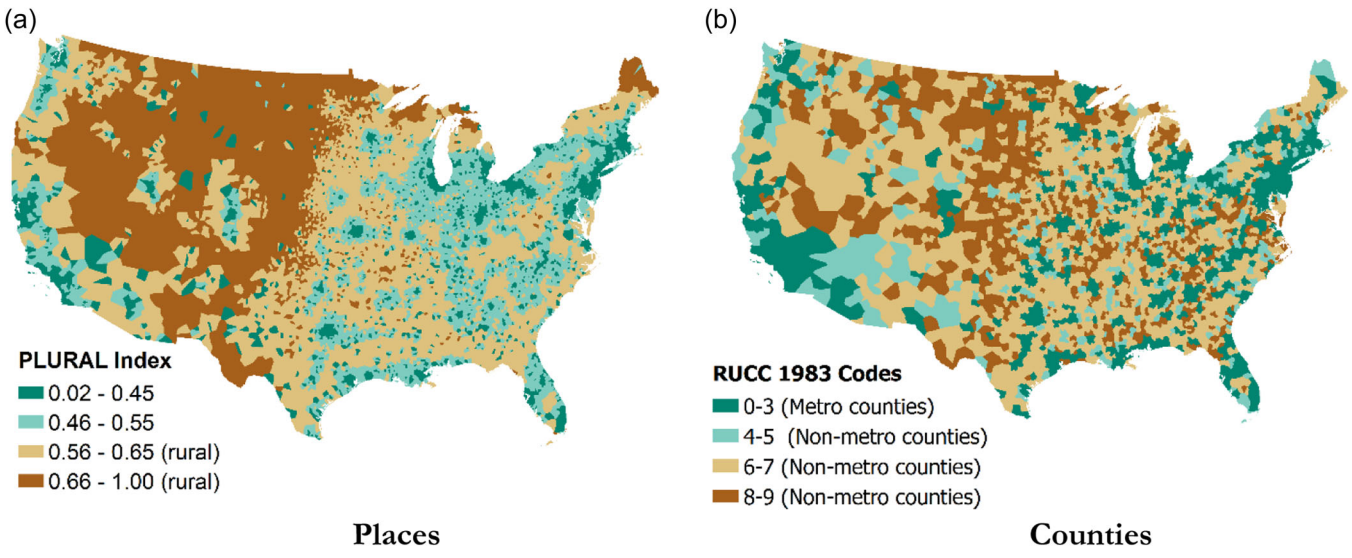

FIGURE A2 Maps of the rural to urban continuum by county- and place-based classification. Two maps showing the rural and urban regions of the United States based on a place-based (a) and a county-based () classification. On the place-based classification to the left, each place is represented by Thiessen polygon, and rural areas are defined as those that above 0.55 on the PLURAL index in 1980. The darker (green) shades represent urban areas and the lighter (brown) areas refer to more typically rural areas. The county-based classification uses the 1983 version of the 'Rural-Urban Continuum Codes' from the OMB.

TABLE A1 Median attributes of places in 2018 by trajectory, changes since 1980 in parentheses.

	Median attributes of places in 2018 (Δ 1980–2018)					
	College share (1)	Manuf share (2)	Agri share (3)	Prof share (4)	Hispanic share (5)	White share (6)
All urban places	20.75	11.64	0.73	37.54	4.32	90.30
All rural places	14.05	11.67	4.39	31.67	2.43	93.94
Rural trajectories						
1. High chronic poverty (15.2%)						
1A. Large, stable	10.22	11.90	4.06	32.54	1.98	62.96
	(+2.52)	(−10.44)	(−3.3)	(+10.26)	(+1.13)	(−9.98)
1B. Medium, growing	10.73	12.38	3.78	30.10	2.48	90.11
	(+3.53)	(−9.19)	(−3.13)	(+8.48)	(+1.76)	(−7.93)
2. Rising poverty (19.7%)						
2A. Small, growing	12.38	11.73	4.32	30.18	2.70	93.43
	(+4.31)	(−6.12)	(−3.64)	(+7.57)	(+2.22)	(−5.76)
2B. Large, growing	11.49	13.73	3.37	30.37	3.14	90.54
	(+3.06)	(−9.3)	(−1.89)	(+8.65)	(+2.59)	(−7.76)
2C. Large, growing, ageing	10.92	11.48	4.29	30.49	2.03	88.28
	(+3)	(−9.17)	(−2.43)	(+7.9)	(+1.48)	(−9.13)
3. Low-medium poverty (50.4%)						
3A. Medium, growing, ageing	18.82	10.98	4.02	32.83	2.46	96.12
	(+8.28)	(−4.54)	(−2)	(+9.54)	(+2.09)	(−3.55)
3B. Large, stable, old	16.52	11.96	4.82	32.77	2.77	95.13
	(+6.66)	(−3.32)	(−1.22)	(+7.77)	(+2.32)	(−4.39)
3C. Small, shrinking, old and ageing	15.76	11.68	4.90	31.68	1.89	95.58
	(+6.88)	(−2.96)	(−2.42)	(+8.07)	(+1.65)	(−4.22)
3D. Medium, stable, ageing	13.80	12.00	4.11	31.03	2.69	94.67
	(+4.91)	(−6.04)	(−2.33)	(+8.31)	(+2.18)	(−4.84)
4. Declining poverty (14.7%)						
4A. Very small, shrinking	12.44	12.04	5.53	29.73	2.60	93.63
	(+5.33)	(−4.15)	(−3.12)	(+8.68)	(+2.03)	(−5.64)
4B. Very small, shrinking, ageing	12.27	10.17	4.54	30.77	1.33	93.01
	(+5.72)	(−6.65)	(−4.39)	(+9.59)	(+0.91)	(−5.86)

Note: A table showing seven variables that have not been used in sequencing, decomposed by trajectory and for urban areas. Columns 1–6 are extract from census and ACS data. The values shown in parentheses are the absolute changes in the median values for each variable for each trajectory between 1980 and 2018. As each variable is a median population share, these changes reflect the percentage point changes in the median values over the period of interest. Column 7 is derived from the Opportunity Insight data and shows the median value for the share of children raised in two parent households based on tax record filings in the 1990s.

TABLE A2 Estimates of regression of intergenerational mobility on rural trajectories, with control variable and splits by sex.

	Model 1A	Model 1B	Model 2A	Model 2B	Model 3A	Model 3B
Trajectory (Ref = High chronic poverty: 1A)						
High chronic poverty						
1B	0.040***	−0.003	0.028***	−0.002	0.013***	−0.003
	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)
Rising poverty						
2A	0.069***	0.003	0.048***	0.002	0.032***	0.007**
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
2B	0.042***	−0.008***	0.029***	−0.006*	0.014***	−0.005
	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)
2C	0.032***	−0.010***	0.021***	−0.009**	0.006**	−0.010***
	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)
Low-med poverty						
3A	0.101***	0.022***	0.078***	0.023***	0.055***	0.025***
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
3B	0.093***	0.018***	0.068***	0.016***	0.049***	0.021***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
3C	0.102***	0.022***	0.076***	0.021***	0.057***	0.027***
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
3D	0.068***	0.003	0.049***	0.003	0.029***	0.004
	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)
Declining poverty						
4A	0.072***	0.010***	0.056***	0.012***	0.031***	0.008**
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
4B	0.054***	0.005*	0.042***	0.008**	0.027***	0.009***
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
Two-parent household (%)		0.051***		0.036***		0.019***
		(0.001)		(0.001)		(0.001)
Income measure	Household	Household	Personal	Personal	Personal	Personal
Subgroup	All	All	Male	Male	Female	Female
Obs	8366	8366	8344	8344	8343	8343
R^2	0.186	0.534	0.131	0.335	0.104	0.181
R^2 adj.	0.185	0.533	0.130	0.334	0.103	0.180
Standard errors	County	County	County	County	County	County

Note: A table showing estimates from six models where intergenerational mobility is regressed on the rural trajectories, with control variable for the share of two-parent households for places (Models 1B, 2B, 3B). In Models 1A and 1B, the dependent variable measures household income attainment for children from low-income households based on all children (estimates shown in Figure 5). In Models 2A and 2B, the dependent variable measures personal income attainment from low-income households based on males only. In Models 3A and 3B, the dependent variable measures personal income attainment for children from low-income households based on females only. Standard errors clustered at county level.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

TABLE A3 Estimates of regression of intergenerational mobility on rural trajectories, with control variable and splits by race and ethnicity.

	Model 1A	Model 1B	Model 2A	Model 2B	Model 3A	Model 3B
Trajectory (Ref = High chronic poverty: 1A)						
High chronic poverty						
1B	0.021***	−0.006	0.009*	0.005	0.004	0.000
	(0.004)	(0.004)	(0.005)	(0.005)	(0.009)	(0.008)
Rising poverty						
2A	0.042***	0.000	0.009*	0.003	0.010	−0.004
	(0.004)	(0.004)	(0.005)	(0.005)	(0.008)	(0.008)
2B	0.017***	−0.014***	0.002	−0.003	0.007	−0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.008)	(0.007)
2C	0.014***	−0.013***	0.002	−0.002	0.010	0.005
	(0.004)	(0.004)	(0.003)	(0.004)	(0.009)	(0.009)
Low-med poverty						
3A	0.070***	0.020***	0.024***	0.017***	0.025***	0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)
3B	0.061***	0.014***	0.011**	0.004	0.018***	0.002
	(0.003)	(0.004)	(0.005)	(0.005)	(0.007)	(0.007)
3C	0.070***	0.020***	0.015***	0.008	0.017*	−0.001
	(0.004)	(0.004)	(0.005)	(0.005)	(0.009)	(0.009)
3D	0.038***	−0.004	0.018***	0.012*	0.019**	0.004
	(0.004)	(0.004)	(0.007)	(0.007)	(0.008)	(0.008)
Declining poverty						
4A	0.047***	0.007*	0.012**	0.006	0.020***	0.009
	(0.004)	(0.004)	(0.005)	(0.005)	(0.007)	(0.007)
4B	0.035***	0.004	0.005	0.002	0.026***	0.016**
	(0.004)	(0.004)	(0.003)	(0.003)	(0.007)	(0.007)
Two-parent household %		0.033***		0.006***		0.019***
		(0.002)		(0.001)		(0.003)
Income measure	Household	Household	Household	Household	Household	Household
Subgroup	White	White	Black	Black	Hispanic	Hispanic
Obs	8324	8324	1580	1580	1408	1408
R^2	0.116	0.283	0.031	0.053	0.018	0.062
R^2 adj.	0.115	0.282	0.025	0.047	0.011	0.055
Standard errors	County	County	County	County	County	County

Note: A table showing estimates from six models where intergenerational mobility is regressed on the rural trajectories, with control variable for the share of two-parent households for places (Models 1B, 2B, 3B). In Models 1A and 1B, the dependent variable measures household income attainment for children from low-income households based on children from White households. In Models 2A and 2B, the dependent variable measures personal income attainment for children from low-income households based on children from Black households. In Models 3A and 3B, the dependent variable measures personal income attainment for children from low-income households based on children from Hispanic households. Standard errors clustered at county level.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

TABLE A4 Estimates of regression of intergenerational mobility on rural trajectories, with control variable and splits by movers and nonmovers.

	Model 1 A	Model 1B	Model 2 A	Model 2B
Trajectory (Ref = High chronic poverty: 1A)				
High chronic poverty				
1B	0.041***	−0.002	0.031***	−0.005
	(0.005)	(0.004)	(0.004)	(0.003)
Rising poverty				
2A	0.075***	0.006	0.059***	0.002
	(0.004)	(0.004)	(0.004)	(0.003)
2B	0.044***	−0.007*	0.036***	−0.007
	(0.005)	(0.004)	(0.004)	(0.003)
2C	0.035***	−0.009**	0.030***	−0.007
	(0.004)	(0.004)	(0.004)	(0.003)
Low-med poverty				
3A	0.107***	0.026***	0.089***	0.020***
	(0.004)	(0.004)	(0.004)	(0.003)
3B	0.101***	0.023***	0.078***	0.013***
	(0.004)	(0.003)	(0.003)	(0.003)
3C	0.109***	0.027***	0.087***	0.018***
	(0.004)	(0.004)	(0.004)	(0.003)
3D	0.076***	0.008	0.058***	0.001
	(0.004)	(0.004)	(0.004)	(0.003)
Declining poverty				
4A	0.074***	0.010***	0.064***	0.010***
	(0.004)	(0.004)	(0.004)	(0.003)
4B	0.054***	0.003	0.049***	0.007
	(0.005)	(0.004)	(0.004)	(0.003)
Two-parent household %		0.053***		0.045***
		(0.002)		(0.001)
Income measure	Household	Household	Household	Household
Subgroup	Mover	Mover	Nonmover	Nonmover
Obs	8307	8307	8307	8307
R^2	0.166	0.453	0.156	0.454
R^2 adj.	0.165	0.452	0.155	0.453
Standard errors	County	County	County	County

Notes: A table showing estimates from four models where intergenerational mobility is regressed on the rural trajectories, with control variable for the share of two-parent households for places (Models 1B and 2B). In Models 1A and 1B, the dependent variable measures household income attainment for children from low-income households based on children who lived outside of their childhood commuting zones as adult ('Mover'). In Models 2A and 2B, the dependent variable measures personal income attainment for children from low-income households based on children who lived within their childhood commuting zones as adult ('Non-mover'). Standard errors clustered at county level.

p

***$p < 0.01$

TABLE A5 Estimates of regression of intergenerational mobility on rural trajectories, with various control variables.

	Model 1	Model 2	Model 3	Model 4	Model 5
Trajectory (Ref = High chronic poverty: 1A)					
High chronic poverty					
1B	0.040***	0.038***	0.041***	0.034***	0.038***
	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)
Rising poverty					
2A	0.069***	0.068***	0.067***	0.062***	0.067***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
2B	0.042***	0.042***	0.043***	0.040***	0.042***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
2C	0.032***	0.032***	0.034***	0.030***	0.032***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Low-med poverty					
3A	0.101***	0.101***	0.097***	0.101***	0.102***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
3B	0.093***	0.092***	0.090***	0.096***	0.097***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
3C	0.102***	0.100***	0.098***	0.101***	0.102***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
3D	0.068***	0.068***	0.066***	0.068***	0.069***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Declining poverty					
4A	0.072***	0.071***	0.069***	0.068***	0.071***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
4B	0.054***	0.053***	0.053***	0.049***	0.051***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Large area change		−0.030***			
		(0.003)			
Nonplace population ratio			−0.007***		
			(0.001)		
<100 residents				0.050***	
				(0.003)	
High ACS margin of error					0.015***
					(0.002)
Income measure	Household	Household	Household	Household	Household
Subgroup	All	All	All	All	All
Obs	8366	8366	8366	8366	8366
R^2	0.186	0.200	0.216	0.225	0.194

TABLE A5 (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
R^2 adj.	0.185	0.199	0.215	0.224	0.193
Standard errors	County	County	County	County	County

Notes: A regression table showing a series of regression estimates to demonstrate robustness of results. The dependent variable measures social mobility on average adult household income of children from households at the 25th percentile of children from rural places within different trajectories. Model 1 shows the baseline regression results with no restrictions on places. Model 2 adjusts for places where the total area of the place has changed by more than 100% from 1980 to 2018. Model 3 adjusts for the ratio of the total population of rural places relative to the total population residing outside of places within countries. Model 4 adjusts for whether a place has fewer than 100 residents in 1980. Model 5 adjusts for high margins of error in the ACS poverty measures. A high margin of error is defined as a place that has a calculated coefficient of variation on the total population below the poverty line that exceed 12%. Standard errors clustered at county level.

***$p < 0.01$.

TABLE A6 Estimates of regression of intergenerational mobility on rural trajectories, with various control variables.

	Model 1	Model 2	Model 3	Model 4	Model 5
Trajectory (Ref = High chronic poverty: 1A)					
High chronic poverty					
1B	0.040***	0.040***	0.045***	0.033***	0.033***
	(0.005)	(0.005)	(0.008)	(0.004)	(0.006)
Rising poverty					
2A	0.069***	0.071***	0.080***	0.064***	0.057***
	(0.004)	(0.004)	(0.006)	(0.004)	(0.006)
2B	0.042***	0.044***	0.055***	0.040***	0.041***
	(0.004)	(0.004)	(0.007)	(0.004)	(0.005)
2C	0.032***	0.032***	0.048***	0.029***	0.019***
	(0.004)	(0.004)	(0.007)	(0.004)	(0.005)
Low-med poverty					
3A	0.101***	0.102***	0.105***	0.105***	0.114***
	(0.004)	(0.004)	(0.006)	(0.004)	(0.005)
3B	0.093***	0.094***	0.097***	0.099***	0.104***
	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)
3C	0.102***	0.102***	0.103***	0.106***	0.112***
	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)
3D	0.068***	0.069***	0.083***	0.068***	0.069***
	(0.004)	(0.004)	(0.006)	(0.004)	(0.005)
Declining poverty					
4A	0.072***	0.073***	0.072***	0.070***	0.072***
	(0.004)	(0.004)	(0.006)	(0.004)	(0.006)
4B	0.054***	0.055***	0.063***	0.051***	0.054***
	(0.004)	(0.004)	(0.006)	(0.004)	(0.007)
Income measure	Household	Household	Household	Household	Household
Subgroup	All	Consistent land area	Low nonplace population	>100 residents	Low ACS MoE

(Continues)

TABLE A6 (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
Obs	8324	8324	1580	1580	1408
R^2	0.116	0.283	0.031	0.053	0.018
R^2 adj.	0.115	0.282	0.025	0.047	0.011
Standard errors	County	County	County	County	County

Note: A regression table showing a series of regression estimates to demonstrate robustness of results. The dependent variable measures social mobility on average adult household income of children from households at the 25th percentile of children from rural places within different trajectories. Model 1 shows the baseline regression results with no restrictions on places. Model 2 drops places where the total area of the place has changed by more than 100% from 1980 to 2018. Model 3 drops places in counties that have large populations that reside outside of incorporated or census designated places. This distinction is made based on whether the rural population is larger than the nonplace population. Model 4 drops places that fewer than 100 residents in 1980. Model 5 drops places with a high margin. A high margin of error is defined based on a calculated coefficient of variation for the total population below the poverty line that exceed 12%. This specific calculation is informed by the recent 'Guide to the American Community Survey (ACS) for the Rural Researcher' (LeBeau, 2023).

TABLE A7 Share of places that have experienced a substantial increase in area from 1980 to 2018, by trajectory.

	Proportion of places in trajectory characterised by:			
	Large area expanse	Large nonplace pop	Small population	High MoE
1. High chronic poverty A	0.13	0.57	0.08	0.60
1. High chronic poverty B	0.09	0.55	0.20	0.70
2. Rising poverty A	0.09	0.45	0.24	0.73
2. Rising poverty B	0.12	0.57	0.11	0.61
2. Rising poverty C	0.12	0.61	0.13	0.61
3. Low-med poverty A	0.13	0.31	0.09	0.49
3. Low-med poverty B	0.09	0.38	0.02	0.37
3. Low-med poverty C	0.08	0.32	0.10	0.58
3. Low-med poverty D	0.10	0.49	0.09	0.58
4. Declining poverty A	0.09	0.36	0.15	0.68
4. Declining poverty B	0.09	0.49	0.20	0.82

Note: A table showing descriptive statistics for each of the variables described in the notes of Tables A1 and A2.