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The Geography of Polarization, 1950 to 2015



TOM VANHEUVELEN AND KATHERINE COPAS

In this article, we ask where affluent and economically insecure households reside. We examine the economic conditions of the tails of wage distributions in local areas to make sense of trends in geographical residence. Using census and American Community Survey data covering 1950 to 2015, we draw two main conclusions. From 2000 onward, economic polarization coincided with two kinds of geographic residential patterns: polarized and poor labor markets. We also find divergence in the link between geographical location and wages across the wage distribution. We question whether the concentration of affluent and poor households in polarized places signify moves to better economic opportunity by low-wage workers. Our results illustrate the geographical consequences of low-wage rent destruction and highlight implications for future work addressing geographical stratification.

Keywords: wage inequality, local labor markets, poverty, affluence, low-wage work

The rise of low-paid and nonstandard work in the United States, largely a feature of the middle- and low end of the labor market, has co-occurred with the rapid growth of top-end pay (Atkinson, Piketty, and Saez 2011). These changes reflect a variety of polarizations well documented in the stratification literature: occupational polarization, or the hollowing out of the middle of the occupational distribution and the bifurcation of employment into good and bad jobs (Goos and Manning 2007; Kalleberg 2013), wage polarization, or the takeoff of top pay and the stagnation and decline of real

wages at the middle and the bottom of the earnings distribution (Piketty, Saez, and Zucman 2017). They also reflect a variety of polarizations across otherwise similar firms via contested markets, typified by the recent growth of monopsony (Manning 2003), an emphasis on core competency versus outsourced labor (Weil 2014) and the growth of firm-level inequality and industrial segmentation (Song et al. 2015; Abowd, McKinney, and Zhao 2018; Wilmers 2017). Across these manifestations of polarization is a common argument that contemporary changes to low-paid and economically insecure

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work are inextricably entwined with contemporary changes in the concentration of economic affluence.

This article situates wage polarization in geographical space and asks where those in affluent and economically insecure households reside. Although class-based segregated residence has long been central to stratification research (Lee and Marlay 2007; Reardon and Bischoff 2011), studies frequently restrict focus to the largest metropolitan areas and late into the contemporary era of rising inequality. In contrast, and motivated by Douglas Massey and Mary Fischer (2003), we extend analytical focus to the local labor market level, examining change in residence patterns from 1950 to 2015 in 722 commuting zones that cover the entire contiguous United States constructed from sixteen waves of census and American Community Survey (ACS) microdata. Then, exploiting the large and locally representative samples of these data, we assess geographical variation in the economic conditions at the tails of local earnings distributions to develop an understanding of the mechanisms behind shifting residence patterns.

Our findings can be summarized by two main points. First, wage polarization has increasingly resulted in two types of labor markets: polarized and poor. In the past fifteen years, affluent and poor households have sorted into the same labor markets, and a large concentration of poor households tends to push out affluent ones. Households in between have become separated from affluent ones and more integrated with poor households. Second, geography is increasingly important for the fortunes of the affluent, and increasingly unimportant for the fortunes of the poor. We are in a unique period of the post-World War II era: the wage differences across labor markets among low-wage workers have never been more similar, whereas the wage differences across labor markets among high-wage workers have never been more different. Low wages differed by a factor of two in 1960, but by only 35 percent today. Within this period, the United States experienced an abrupt shift from Keynesian economics to neoliberal Reaganomics. The subsequent deregulation, deindustrialization, and union-busting decreased

workers' power, especially those with lower levels of educational attainment and employed in lower-wage jobs. Furthermore, contingent work for less-educated workers has grown more uniform across labor markets. In total, we are skeptical that the recent connection between affluence and poverty in certain labor markets is due to the pull of brighter economic fortunes for lower-paid and lower-skill workers. Instead, our findings support recent arguments of the dependence of affluent households on a stock of local low-paying labor (Mazzalari and Ragusa 2013; Wilmers 2017) as well as an underexamined geographical consequence of the removal of protections and power among middle- and low-pay workers.

We argue that recent changes to wage polarization have had negative consequences for low-wage workers, not only those far removed from affluent labor markets, but increasingly those inside them as well. Our results have three main implications. First, we show the geographical consequences of wage polarization, especially for low-wage workers. Scholars have argued that contemporary changes in the labor market have destroyed many of the rents enjoyed by low-wage workers (Sørensen 2000): job security, livable wages, union membership, internal labor markets, and employment benefits, for example (Cappelli and Keller 2013; Kalleberg 2013; Weeden and Grusky 2014; Weil 2014; VanHeuvelen 2018b). Our work extends this line of research to place-based wage rents. Bad jobs are increasingly bad everywhere, suggesting that low-paid workers have fewer places to turn for brighter economic opportunities. Second, our results present an important challenge to rosier arguments of the positive agglomeration externalities among densely populated "brain hubs" (Moretti 2012). A resonant claim in recent years among geographical stratification research has been that urban agglomeration and the high wages of high-paid workers in such places tend to have widely experienced benefits (Glaeser et al. 2009; Glaeser 2012): one of the more lucrative and desirable choices for all residents is to attract the affluent. Our findings suggest that much of the work that developed these conclusions focused on a unique historical era of unusually large agglomeration wage benefits for low-wage work-

ers. Recent decades have seen a broadly shared deterioration of pay for lower-wage workers and a growing division between the top and the bottom, particularly in affluent areas. Third, our work speaks to popular concern over the increasingly divergent fortunes across American labor markets. Some places, such as densely populated global cities along the coasts, are pulling apart economically, politically, and socially from others, such as small towns that rely on a few manufacturing or agricultural employers (Holzer et al. 2011), leading some to suggest policies like relocation vouchers for low-income workers (Strain 2014; Hsieh and Moretti 2015; Lindsey and Teles 2018). Our findings suggest that such recommendations might overemphasize differences at the top end of the wage distribution and may not recognize long-run historical leveling occurring at the low end of the labor market. Although economic fortunes have grown in a small number of large and affluent labor markets, places are becoming more uniform for many, particularly those in low-paying and insecure work.

BACKGROUND

The recent upswing of U.S. inequality has been driven by occupational polarization, or the growth of high- and low-paying jobs concurring with the hollowing out of middle-paying jobs (Wright and Dwyer 2003; Dwyer and Wright 2019; Mouw and Kalleberg 2010) and wage polarization, or the concurrent takeoff of top pay alongside the stagnation and decline of median and lower wages (Piketty, Saez, and Zucman 2017). At the same time, scholars note that low-paying jobs are frequently precarious and insecure, defined by uncertain working hours, lower work quality, less occupational authority and autonomy, fewer benefits, and greater prevalence of part-time work (Kalleberg 2013). How do these polarizations and changes to precarity occur across geographical space? Underneath macrolevel economic trends are widely diverse local labor markets, such as densely populated cities tightly connected to global markets, agricultural and ranching communities, and rust belt communities adapting to deindustrializa-

tion and import competition (Moller, Alderson, and Nielsen 2009). In the following section, we discuss reasons to anticipate why wage polarization may occur unevenly across local labor markets, resulting in uneven economic consequences for low-paid workers.

The Case for Between-Place Polarization

On the one hand, wage polarization may lead to labor market polarization, in that the bifurcation of employment into good and bad jobs might aggregate up to labor market bifurcation into cities with better and worse economic opportunities for the local workforce (compare Florida 2014; Glaeser 2012; Lindsey and Teles 2018; Moretti 2012). Sociologists have shown intra-metropolitan income segregation to have grown rapidly over the past thirty-five years, driven primarily by changing residential patterns of high- and low-income households (Reardon and Bischoff 2011). This research tradition assesses many dimensions of segregation, but primarily focuses on neighborhoods in the largest labor markets (Massey 1996; Lee and Marlay 2007; Owens 2012; Wilson 2011). Yet segregation does not exclusively occur among neighborhoods of large cities. For example, Daniel Lichter, Domenico Parisi, and Michael Taquino show that racial segregation occurs across “places” within metropolitan statistical areas (2015). Similarly, Enrico Moretti documents the importance of large and densely populated “brain hubs,” such as Silicon Valley, Seattle, Washington, New York City, and Stamford, Connecticut, that draw highly educated workers (2012), partially due to desirable cultural amenities (Florida 2014) and partially to higher potential earnings through agglomeration economies (Glaeser and Gottlieb 2009; Moretti 2012).¹ Cooperation, serendipity, network connections, job switching, and information sharing are facilitated in these urban areas, allowing knowledge workers to be more efficient, raising productivity and thus pay. Such brain hubs have largely pulled away from less populated cities and towns, which have declined in population, returns to skill, and local job opportunities. Relatedly, many smaller cities built

1. Moretti and Glaeser also identify the importance of within-career upward wage mobility for low-wage workers in more affluent areas. Our research is unable to assess this component of their arguments.

around a small set of manufacturing industries have lost a significant proportion of this core employment due to globalization and import competition (Holzer et al. 2011; Autor, Dorn, and Hanson 2013), whereas agricultural communities struggle to retain employment and college-educated residents (Lichter and Schafft 2016).

If income and employment polarizations correspond with labor market polarization, what consequences might this have for lower-wage work in affluent areas? Some research suggests that the factors leading to the beneficial wage-boosting agglomeration externalities enjoyed by more highly educated and skilled workers extend to low-wage workers. For example, Moretti shows that wage growth among high school educated workers was greater in cities with larger mean wages for college-educated workers (2012; see also Glaeser and Gottlieb 2009; De La Roca and Puga 2017).² If economic fortunes for the affluent have diverged across areas, then lower- and middle-wage workers across such places might have similarly diverged, those in affluent labor markets pulled up via the same mechanisms detailed in agglomeration theories. Furthermore, thriving labor markets might allow for broadly improved employment opportunities for all workers. Given that these areas are typically denser in population, industries, and job opportunities, they might have more favorable employment opportunities for both more highly and less-skilled workers, allowing for improved matching between firm and worker, wage-boosting job mobility, and more employment opportunities immediately following job loss (Sorensen and Sorenson 2007; Mouw and Kalleberg 2010; De La Roca and Puga 2017). All these may boost not only wages, but also worker leverage and thus job quality.

Alternatively, the least skilled workers might be pushed out of good labor markets to poorer but more affordable areas through such factors as rising housing costs (Ganong and Shoag 2017). Similarly, economic changes that result

in the economic divergence of labor markets might exacerbate pay inequality at the low end by pushing wages down outside affluent and populous areas. For example, David Autor and his colleagues show the geographically uneven consequences of import competition with China, which hit especially hard in areas heavily reliant on a smaller set of employers and industries (Autor, Dorn, and Hanson 2013). Less-educated and lower-paid workers incurred the brunt of the pecuniary consequences, experiencing large cumulative wage declines over time and higher probabilities of repeat exposure to import competition across job switches. Furthermore, shocks such as deindustrialization have broadly rippling consequences, as many related industries, such as services and construction, experience related economic hardship. Scholars have shown that the most vulnerable workers in areas that experience such economic shocks are the least likely to migrate to better opportunities (Wozniak 2010; Moretti 2012). Thus, migration may occur unevenly, leaving behind the least skilled and most vulnerable workers in declining areas. The resulting negative economic conditions might translate into lower pay, worse job quality, and fewer benefits for low-skill and low-pay workers. Low pay across labor markets might also be exacerbated through the contemporary dynamics of economic polarization.

The Case for Within-Place Polarization

Alternatively, the concentration of affluence in labor markets may co-occur alongside a broadly shared growth of low-wage work, which would necessarily result in wage polarization both within and between places. Contemporary affluent households might depend on a stock of low-wage workers. For example, Francesca Mazzolari and Giuseppe Ragusa argue that high-earning households rely on the outsourcing of domestic services, such as childcare, cooking, cleaning, and transportation, to low-paid—frequently female immigrant—workers (2013).

2. Our research is similar to work by Moretti and Glaeser in focusing on how agglomeration economies—which largely benefit highly paid workers—affect the entire local wage distribution. Ours differ from theirs primarily by examining these spillover effects in a longer historical series, and by examining related issues of job quality for less-educated workers.

Similarly, Jesper Sorensen and Olav Sorensen find horizontal and vertical differentiation among Danish labor markets to be key for generating inequality (2007). Nathan Wilmers extends their analysis by arguing that high-income consumers generate inequality within industries through the demand of status or quality differentiation (2017). For example, high-income consumers frequently demand variety of choice of restaurants, which generates demand for many lower-paid and insecure workers to staff these suites of choices. If high-income consumption relies on low-paid and insecure service and production workers to provide outsourced domestic care and choice among cultural amenities, then one might anticipate that the two poles of the labor force to coreside in the labor markets where the affluent locate.³

Similarly, changes to organizational norms might result in the growth of highly and low-paid workers in the same area. David Weil identifies the growing importance of a managerial focus on *core competency*, or workplace fissuring (2014). Low-skill labor is viewed as a cost to be temporarily incurred. Firms outsource low-skill labor to external companies that face great pressure to reduce wages in order to minimize costs. These changes resulted in declining pay and benefits for outsourced workers (Dube and Kaplan 2010). Many services, such as cleaning, cooking, and security, require in person presence for the completion of occupational tasks, and there is little reason to suspect that brain hubs, which frequently house large and profitable global firms, are somehow immune from the pressures to fissure. Thus, affluent areas with large stocks of skilled workers employed in the core competency of high-paying firms might coreside in areas with workers experiencing declining wage standards.

There is additional theoretical reason to expect diverging geographic trajectories across

top and bottom ends of the labor market. Aage Sørensen details the importance of *rent destruction*, or the removal of benefits and protections that push wages above market levels, among labor for the contemporary rise of inequality (2000). He argues that the destruction of rents won during the New Deal and immediately following World War II—unionization, minimum wages, internal labor markets, ideals of worker protection, and job security, for example—should result in “less positional inequality, but more inequality overall . . . the destruction of rents in the labor market has created a labor market with fewer structural supports for the returns to labor” (2000, 1553).⁴ That is, there should be fewer predictable locations of relatively higher wages for middle- and lower-wage workers despite growing wage inequality. Much research on low-paid and contingent work has followed such argumentation, finding that a significant reason for growing economic insecurity is the destruction of protective rents among the lower end of the labor market (for example, Western and Rosenfeld 2011; Van-Heuvelen 2018b). If broadly experienced rent destruction drives the contemporary growth of low-paid and precarious work, then recent trends should correspond with less geographical variation of rents, resulting in low-wage convergence across areas. Simply put, bad jobs might be increasingly bad across labor markets, leading to a convergence of economic fortunes of low-wage workers across labor markets that are more and less affluent.

Sociologists provide additional theoretical reason to expect that the mechanisms of high- and low-wage work may lead to within-place polarization. Kim Weeden and David Grusky note the importance of rent creation at the top end of the labor market and its independence from low-wage rent destruction (2014). For example, occupational closure and barriers to college degrees keep the supply of skill artificially

3. An important counterargument to the discussion in this section is that brain hubs might grow more polarized over time as low-wage workers select into these areas based on their possibility for upward wage attainment over their careers (see De La Roca and Puga 2017). Such a possibility is not testable with our census data and beyond the scope of the current project, but presents a compelling alternative mechanism to the ones focused on in this article. Future research is needed that focuses on differential selection.

4. For example, the decline in labor union membership and power results in lower between-group inequality between union and non-union members, but increases overall inequality in the labor market.

low relative to demand, increasing wage returns. Winner-take-all markets and growing market power of a smaller number of firms similarly should concentrate occupational location of high-wage work, increasing the concentration and pay of high-wage workers in a smaller number of areas. From this perspective, the fortunes of high- and low-paid workers are segmented across relatively isolated spaces of the labor market, where workers are more or less successful in creating, or maintaining, rents. In this case, rent creation among top wages in brain hubs need not couple tightly with local rent creation among low wages.

Demographic Changes and Geographical Polarization

Care is needed to ensure that wage differences across labor markets are not confounded by group-based differences in wage setting and location of residence. The era under consideration includes several substantial policy and demographic changes, including the civil rights movement and subsequent backlash, the gender revolution and upward educational and occupational attainment of women, and changes to immigration laws that partially account for growing racial and ethnic diversity. These policies have resulted in well-documented wage differences across sex and racial-ethnic groups that result partially from discriminatory practices and barriers to social networks and skill development (compare Pedulla and Mueller-Gastell 2019). Previously research illustrates that such wage differences play out differently in different labor markets due to structural factors such as workforce casualization, deindustrialization, and occupational segregation (McCall 2002) as well as local demographic composition (Huffman and Cohen 2004). Similarly, residential patterns have changed substantially over time. Smaller cities and rural areas have seen an influx of Hispanic immigrants (Lichter et al. 2010; Massey 2010), and African American migration to the southern United States has increased substantially over the past two decades (Frey 2014). These patterns, along with the well-established segregation patterns

documented by stratification scholars and demographers, may provide important understanding of the mechanisms driving results (Holliday and Dwyer 2009; Wilson 2011). We therefore pay special consideration to how results vary across gender, race, and nativity groups.

DATA

We use sixteen waves of U.S. Census and American Community Survey microdata (Ruggles et al. 2019). Individuals and households are sorted into 722 local labor markets, *commuting zones* (CZ), which cover the entire contiguous United States (Tolbert and Sizer 1996; VanHeuvelen 2018a). Census definitions of local labor markets, CZs are county clusters grouped together based on census journey to work data. Briefly, commuting is greater between work and home across the counties of a single CZ than across counties of two separate CZs (for example, in California, more workers commute between San Francisco and San Mateo counties than between San Mateo and Santa Barbara counties). CZs have become increasingly common in geographical studies of labor markets and economic inequality (Autor and Dorn 2013; Autor, Dorn, and Hanson 2013; Bloome 2014; Chetty et al. 2014; Charles, Hurst, and Schwartz 2018; VanHeuvelen 2018a). We use Dorn's (2009) publicly available codes to construct 1990 definition commuting zones for years 1950, 1970, 1980, 1990, 2000, and 2005–2009. We then extend his sorting logic to “Minipuma” identifiers in year 1960 and updated public use micro areas (PUMA) definitions for pooled years 2011–2015.⁵ In total, we have eight repeated observations of 722 local labor markets, resulting in 5,776 CZ-year observations.

Commuting zones are a useful labor market definition for this study. Most important, they cover all areas of the United States. This advantage overcomes limitations of many income segregation and polarization studies that select on either data availability or labor market population size. The current research thus reconciles studies of urban (Patillo and Robinson 2016) and rural (Lichter and Schafft 2016) labor

5. We label 2011–2015 as 2010 for simplicity.

markets. Furthermore, CZs are more fine-grained than state-level measurements (Ganong and Shoag 2017). A pear farmer in Washington State's Yakima Valley might not consider herself in the same labor market—or face the same changes in cost of living and economic opportunity—as a childcare provider in Seattle, for example. CZs are also defined through the lived experience of workers based on residence and occupational location, a benefit over definitions of labor markets based on political jurisdictions, such as counties or states. Many workers in Washington, D.C., commute from nearby counties, such as Fairfax County in Virginia and Montgomery County in Maryland. Additionally, a variety of microlevel measurements, such as employment status and wage distributions, can be computed as a CZ-level characteristic, an advantage over aggregated categories available through the census. However, the commuting zone definition has important drawbacks. Perhaps most critically, we cannot measure census tract or neighborhood segregation, or income segregation, across places within a commuting zone (Dwyer 2007; Lichter, Parisi, and Taquino 2015). For example, the New York City commuting zone includes the five boroughs as well as surrounding commuter counties, such as Westchester County. Although this reflects the location of residence and work in the overall New York City labor market, the meaningful fine-grained income segregation that occurs across counties, places, blocks, and buildings cannot be detected. Our study is therefore best understood as complementary to city-level segregation studies, providing a context for how economic polarization plays out across the full distribution of U.S. labor markets.

Measures of Affluence

We use four variables to examine affluence. First, we measure the local concentration of af-

fluent *households*, which we conceptualize as those at or above the 95th percentile of the national household year-specific income distribution.⁶ To account for variation of household size, we normalize income by the square root of household members. Household income includes total money income of all household members age fifteen or more during the previous year: wage and salary income, business and farm incomes, social security income, welfare and public assistance, interest, dividend, and rental income, and other money income.⁷ Measures are thus post-transfer, pre-tax. We compute the percentage of households in a CZ defined as affluent over the total number of households in that zone. Second, we measure the normalized household income at the local 95th percentile. Third, we shift focus to *individual wages* and measure the local level of the 95th wage percentile. Wages are constructed by dividing a worker's total pre-tax wage and salary income (inclusive of wages, salaries, commissions, cash bonuses, tips, and other monetary income received from an employer) by annual hours worked. Top-coded wage incomes are multiplied by 1.5, wages are bottom-coded to half the year-specific federal minimum wage, and wages are adjusted to 2009 dollars using the personal consumption expenditure index (VanHeuvelen 2018a). Fourth, we measure the wage bill share of the top 5 percent of wage earners in a CZ. This is measured as the total wage income of those at or above the 95th percentile, divided by the total annual wages earned in a commuting zone.

Definitions of Low-Paid and Insecure Work

We use four variables to measure local low-paid and insecure work. First, we measure the rate of *relative poverty*, identified as a *household* earning less than half the median national household income. These measures are normalized by the square root of household mem-

6. In main results, we do not normalize incomes by local cost of living, which has typically been computed through some relative measure of household rent. Rebecca Diamond shows that local cost of living and local concentration of amenities, such as availability of green space, cultural activities, and public transportation, tend to wash one another out when computing local wage and inequality levels (2016). We do replicate results adjusting for local cost of living.

7. Specific categories vary by year. We replicated results using only salary and wages, but results were similar.

bers.⁸ Second, to measure low pay, we measure the local *individual wage* at the 10th percentile. Third, we measure the wage bill share of the 10th percentile and below of workers relative to total wages earned in a commuting zone. Fourth, we measure the proportion of employed prime-age men and women (separately) who work part time, defined as working twenty hours a week or less or twenty-six weeks a year or less, and have a high school degree or less.⁹ Descriptive statistics are listed in table 1. We also examine how wage results are affected by local variation in cost of living. Details are provided in corresponding sections in the results section.¹⁰

Controls

Because geographical sorting could be driven by a variety of factors, including local industries, demographics, educational attainment, population density, and policy legacies, we include several characteristics of local labor market when estimating regression models. These are noted in table 1.

METHODS

Regression results come from two-way fixed-effects regression models. We include fixed effects for both year and commuting zone. Results are weighted by the logged number of households in a commuting zone. We use ro-

bust standard errors and test all regression main results using bootstrapped and jackknifed standard errors. Several other analyses are descriptive in nature. We discuss specific methodological decisions for all such analyses.¹¹

RESULTS

Figure 1 shows the relationship, by year, of the percentage of households that are affluent, defined as at or above the 95th percentile of the country-level normalized household income, and that are poor, defined as half or less than the national median normalized household income. Markers are weighted by the logged household count in a commuting zone. Among the many notable patterns, we highlight four. First, in all years, CZs with the highest concentration of affluent households tend to be those with the lowest concentration of poor households. Simple correlations between these percentages range from -0.77 (1960) to -0.60 (2000). At the same time, substantial heterogeneity exists across the least poor CZs in terms of the concentration of affluent households. Among such CZs, nearly the entire range of affluence concentration is observable. Second, the poorest commuting zones are unique in their consistent low concentration of affluent households.¹² Such places, like eastern Kentucky, where President Lyndon Johnson announced

8. Unfortunately, tax information from the gold standard tax measurement system, NBER's TAXSIM, is not available at the state level prior to 1977 (Brady, Baker, and Finnigan 2013; Young et al. 2016), and so our measure of relative poverty comes from post-transfer, pre-tax measures.

9. In sensitivity analyses, we measure the proportion of workers in home production substitute industries (Mazolari and Ragusa 2013). We also replicated the results of Moretti (2012) by examining the CZ-median high school and college wages. Results reinforced main conclusions below. We follow the logic of Liu and Nazareno, this issue, who show that the negative consequences of precarious work are largely concentrated among less-educated workers (2019).

10. We replicated all results with and without foreign-born workers. We reach the same substantive conclusions across these sampling decisions.

11. The results are intended to *descriptively* assess changes across labor markets over time. Our research design is not robust enough to make strong causal claims about the relationship between local labor market conditions and wage attainment. In this article, we draw on the strengths of examining inequality trends over a long period using a full set of local labor markets, rather than develop a stronger and narrower causal identification between a treatment and an inequality outcome. All results should be read with the understanding of this trade-off.

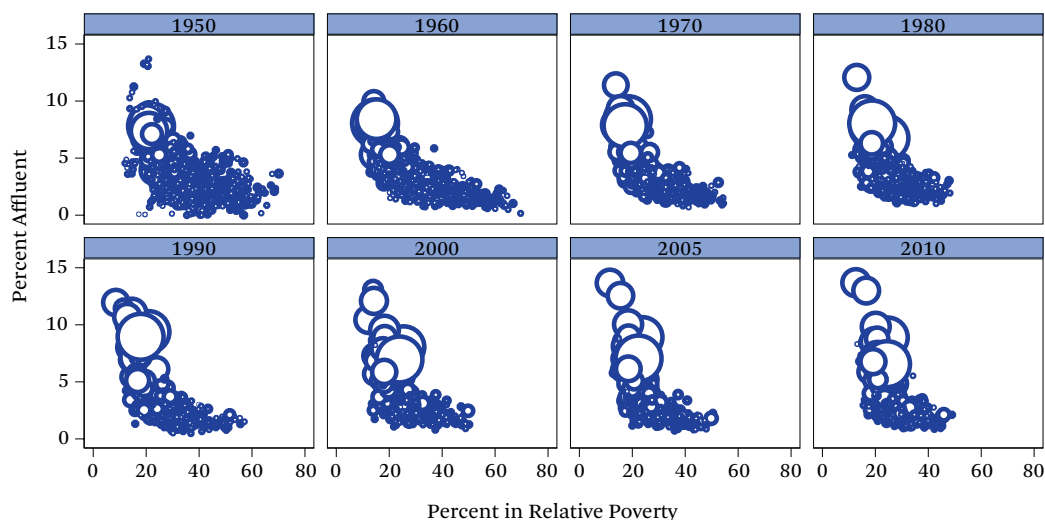
12. We find that areas with high average poverty have consistently low levels of relative affluence, and that maximum levels of affluence concentration among poor areas reach the median value of affluence concentration of the whole sample.

Table 1. Descriptive Statistics

		1950	1960	1970	1980	1990	2000	2005–2009	2011–2015
Percent affluent	Mean	3.53	2.90	2.89	3.25	2.41	2.82	2.70	2.90
	SD	2.13	1.42	1.20	1.32	1.39	1.38	1.47	1.44
Percent relative poverty	Mean	35.70	33.16	30.79	27.97	29.87	28.54	28.67	28.28
	SD	11.28	12.02	7.69	6.88	7.83	6.78	6.60	6.18
Population density	Mean	3.15	3.21	3.24	3.36	3.38	3.47	3.48	3.51
	SD	1.35	1.38	1.44	1.44	1.48	1.52	1.56	1.56
Wage: 10th percentile	Mean	0.92	1.12	1.48	1.56	1.51	1.68	1.67	1.66
	SD	0.19	0.26	0.20	0.13	0.13	0.11	0.11	0.10
Wage: 95th percentile	Mean	2.56	2.85	3.16	3.23	3.24	3.37	3.44	3.48
	SD	0.15	0.15	0.12	0.11	0.12	0.14	0.16	0.15
Wage bill share: bottom 10 percent	Mean	0.04	0.03	0.02	0.02	0.02	0.02	0.01	0.02
	SD	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Wage bill share: top 5 percent	Mean	0.10	0.09	0.10	0.12	0.14	0.15	0.16	0.17
	SD	0.03	0.02	0.01	0.01	0.01	0.02	0.02	0.02
Part-time work: prime-age high school men	Mean	0.07	0.09	0.06	0.06	0.08	0.07	0.08	0.09
	SD	0.03	0.04	0.02	0.02	0.02	0.02	0.02	0.02

Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).

Note: 722 repeated observations across eight time periods. Percent affluent and percent poverty computed as local percentage of households at or above 95th percentile of national household income distribution, or at or below half of national median income. Wage and wage bill share information computed from local wage distributions in commuting zones. Control variables in regression models include: median household income, percent employment in manufacturing, in service, and in agriculture, percent of individuals age twenty-five and older with a college degree, educational heterogeneity (Moller et al. 2009), population density, female labor-force participation, percent of population over age sixty-five, percent population black, percent of households headed by a single mother, abstract task occupational concentration, and routine intensive occupational concentration. Descriptive statistics of controls available on request. For ease of presentation, we refer to the 2005–2009 combination of years as “2005,” and 2011–2015 as “2010.” N = 5,776.

Figure 1. Relationship Between Percentage of Affluent and Poor Households

Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).

Note: A total of 722 commuting zones. Percent affluent computed as the number of households at or above the nation-level 95th household income percentile over the total number of households in a commuting zone. Percent relative poverty is the number of households in a commuting zone at or below half the nation-level median household income. Markers are weighted by the number of households in a commuting zone. For ease of interpretation, in figures we label years 2005–2009 as “2005” and 2011–2015 as “2010.”

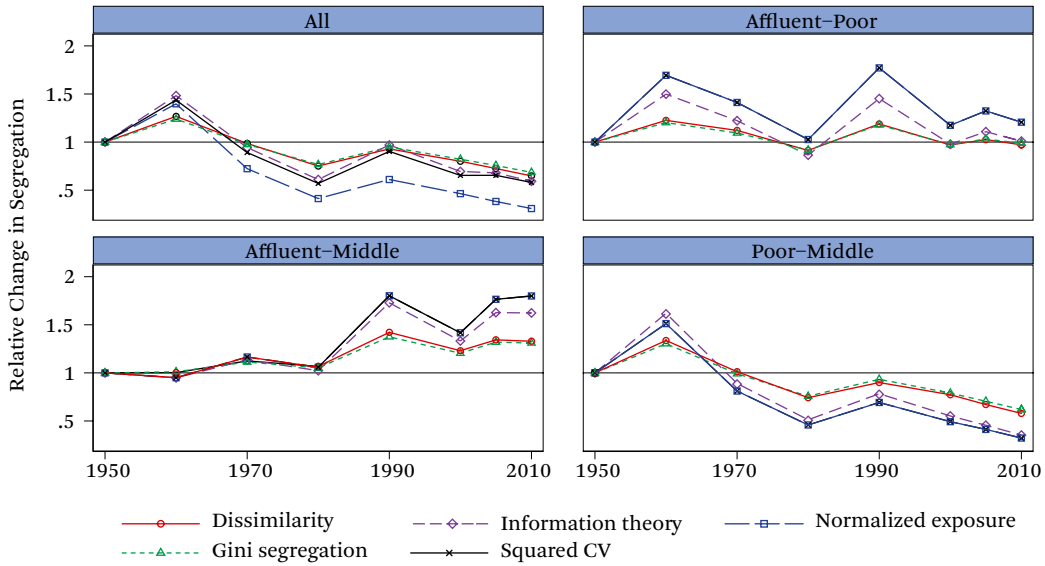
the War on Poverty, have very high rates of poverty and little connection to affluence. Third, affluent areas have growing poverty.¹³ In 1990, for example, the lowest CZ poverty rates were at 9.5 percent. By 2015, the lowest poverty rate was 13.5 percent. Fourth, one can observe from 2000 onward the separation of three labor markets as unique in their concentration of affluence: Washington, D.C., San Jose, California, and San Francisco, California.¹⁴

How has wage polarization occurred across geographical space? Figure 2 uses the logic of Massey and Fischer (2003) to examine change in CZ segregation of affluent households, poor

households, and middle-income households, or those in between affluent and poor. These three groups do not perfectly capture income segregation across the whole of the income distribution, potentially masking income segregation occurring between and within these poles. For example, Sean Reardon and Kendra Bischoff measure income segregation as occurring across income binned into year-specific groups ranging from fifteen to twenty-five (2011). Yet results highlight the geographical consequences of wage polarization at the tails of the distribution, and notably, we reach the same conclusions when comparing across

¹³. The very large relative poverty rates reflect the income convergence between the South and the rest of the country during the early and mid-twentieth century (Lindert and Williamson 2016; Ganong and Shoag 2017).

¹⁴. Other intuitive labor markets with large numbers of affluent respondents, such as New York City and Seattle, have high concentrations of affluent workers. New York City has the fourth highest concentration in the most recent wave, and Seattle is in the top twenty. Because commuting zones incorporate many surrounding smaller cities (for example, the Seattle commuting zone includes less-affluent surrounding areas, such as Kent, Everett, Renton, Bremerton, and Tacoma), some of the concentration of affluent workers in some city centers is diffused by these broader labor market definitions.

Figure 2. Relative Change in Segregation of Affluent, Poor, and In-Between Households

Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).

Note: A total of 722 commuting zones. Segregation measures computed from household counts at the commuting zone level and estimated separately by year. All segregation measures normalized to equal 1 in 1950 to ease interpretation. *Affluent* refers to households at or above the nation-level 95th household income percentile. *Poor* refers to households at or below half the nation-level household median income. *Middle* refers to all other households. Substantively similar results used when comparing income deciles and ventiles.

household income deciles and ventiles. We also reach the same conclusions if we adjust local measurements of income based on cost of living (Moretti 2013). We include five common indices of evenness and exposure used in neighborhood-level segregation studies: the dissimilarity segregation index, Gini segregation index, information theory segregation index, squared coefficient of variation segregation index, and (n-group) normalized exposure segregation index. For interpretability of trends across indices, figure 2 shows changes relative to levels normalized to one at 1950.

Figure 2 shows that CZ-level segregation of affluent, middle-income, and poor households declined substantially over time, which reflects Massey's and Fischer's findings (2003). Overall, households in these three income groups are increasingly integrated in the same local labor markets. However, comparisons of paired groups reveal important heterogeneity. The overall trends are driven primarily by the de-

clining CZ-level segregation of poor and middle-income households. In contrast, aside from year-to-year fluctuation, the segregation of poor and affluent households has remained relatively constant, although affluent-poor segregation declined in recent decades relative to the 1990 high-water mark. At the same time, we observe increasing separation across labor markets of affluent and middle-income households. These results suggest two countervailing types of labor market sorting: some places are becoming increasingly polarized, becoming more defined by a concentration of affluent and poor households, whereas other areas are becoming increasingly isolated from high-income earners.

To better understand the nature of such geographical sorting, we present the results from two-way fixed-effects regression models predicting the proportion of affluent and poor households in table 2. That is, models predict the proportion affluent using the proportion

Table 2. Fixed-Effects Regression Models Predicting Proportion Affluent and Proportion in Relative Poverty

	Proportion Affluent			Proportion Poor		
	(1)	(2)	(3)	(4)	(5)	(6)
Proportion poor	-0.095*** (0.005)	-0.0031	0.0002			
Proportion affluent				-2.419*** (0.090)	-0.0231 (0.078)	0.0184 (0.086)
Proportion X 1960			-0.0008 (0.006)			-1.0470*** (0.090)
Proportion X 1970			-0.0235*** (0.007)			-0.4748*** (0.085)
Proportion X 1980			-0.0323*** (0.007)			-0.1911* (0.088)
Proportion X 1990			-0.0066 (0.008)			-0.3167*** (0.095)
Proportion X 2000			-0.0109 (0.008)			0.0458 (0.094)
Proportion X 2005–2009			-0.0206* (0.008)			0.1672 (0.088)
Proportion X 2011–2015			-0.0280*** (0.008)			0.4193*** (0.089)
Commuting zone fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Controls?	No	Yes	Yes	No	Yes	Yes
N	5,776	5,776	5,776	5,776	5,776	5,776

Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).

Note: Robust standard errors in parentheses. Models include controls for manufacturing employment, agriculture employment, service employment, proportion twenty-five and older with a college degree, educational heterogeneity, population density, population growth, median household income, proportion age sixty-five and older, proportion black, proportion Hispanic, proportion immigrant, female labor-force participation. Controls computed from IPUMS.

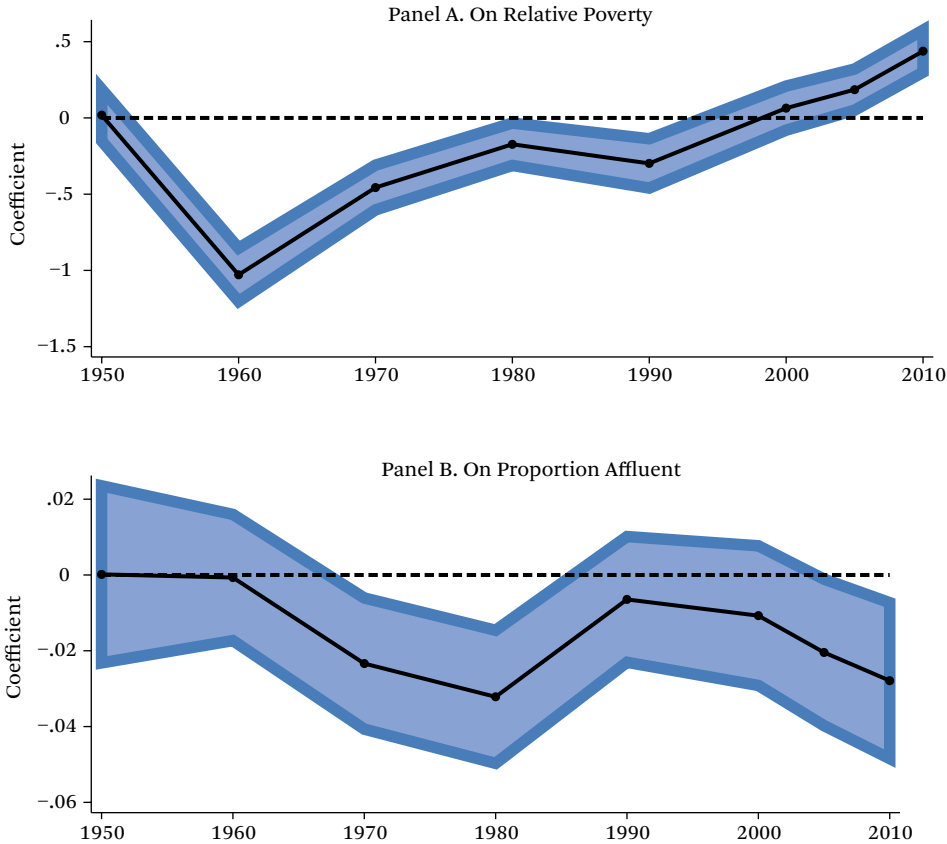
* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests)

poor, and vice versa. Models control for year and CZ fixed effects and use robust standard errors. Thus, results show how change in affluence concentration associates with change in poverty concentration, and vice versa.¹⁵

Models 1 and 4 show simple associations from regression models that include fixed effects but not control variables. In both cases, we observe significant and negative associations. Growth in affluence is associated with a decline in the proportion of poor households,

and growth of poor households associates with a decline in the proportion of affluent households. Yet the main coefficients in models 2 and 5 are both negative and statistically insignificant when controls are included in models. Sensitivity tests show significance to be removed with the addition of median household income. Median household income is highly significant and positively associated with affluence and negatively associated with poverty. However, we observe significant and diverging

15. We reach the same substantive conclusions if we use measures of poverty and affluence adjusted by local cost of living.

Figure 3. Year-Specific Coefficients from Fixed-Effects Models

Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).

Note: Coefficients follow fixed-effects (commuting zone FEs) regression models in table 2. Affluence (top panel) and poverty (bottom panel) coefficients are interacted with time period indicators. Shaded areas represent 95 percent confidence intervals.

trends over time in models 3 and 6. To ease interpretation, these are presented in figure 3, which shows year-specific coefficients for proportion affluent on proportion poor (top panel) and vice versa (bottom panel). First (top panel), we observe that prior to 2000, the presence of affluent households had a negative and statistically significant association with relative poverty. That is, growth in the proportion of affluent households tended to correspond with declining rates of relative poverty. However, this negative association shrunk substantially in magnitude between 1960 and 1990, and since 2000, it has reversed: growth in the rate of affluent households corresponds with growth in

relative poverty. Results from models 1 and 2 largely reflect the combination of these opposite associations.

Turning attention to the bottom panel, we observe that growth in the proportion of poverty generally corresponds with a declining proportion of affluent households. Although some years, 1950, 1960, 1990, and 2000, have insignificant coefficients, all point in the same negative direction, in contrast to figure 2. Notably, though the positive association in the top panel from 2000 onward has grown in magnitude, the negative association in the bottom panel has as well. Since 2000, the magnitude of this negative association has increased by 170 percent, from

−0.01 to −0.027 (difference of the two coefficients, $p < .001$, two-tailed test).

These results highlight two main conclusions. First, whereas the wage-boosting influence of agglomerated economies could be effectively argued to raise lower-wage households out of poverty in local areas from 1960 to 1990, this association has reversed in the past fifteen years. In the contemporary era, the concentration of affluence corresponds with an increasingly polarized labor market. This finding is suggestive of contemporary high-income households relying on a low-paid and insecure stock of workers. In contrast, areas with large stocks of low-earning households are becoming locked out of the polarized economy, and high-earning households are increasingly sorting out of these labor markets. We further assess these arguments in sensitivity analyses using recentered influence function regression models separately by year, examining the associations across percentiles of the distribution of affluence or poverty as independent variables. We find that the negative effect on affluence concentration is greatest in most recent years among the highest percentiles of poverty concentration. Simply put, labor market wage polarization appears to be resulting in two forms of geographic polarization.

Economic Conditions Across a Polarized Geography

Thus far, our results suggest that poor households have become more concentrated alongside affluent ones, and that many labor markets are increasingly segregated from affluence and hold large stocks of poor households. These findings, however, lend themselves to starkly different interpretations. Edward Glaeser, Matt Resseger, and Kristina Tobio (2009) and Enrico Moretti (2012), for example, note that such associations might be spurious if less-skilled workers sort into agglomerated areas to take advantage of rosier economic opportunities.

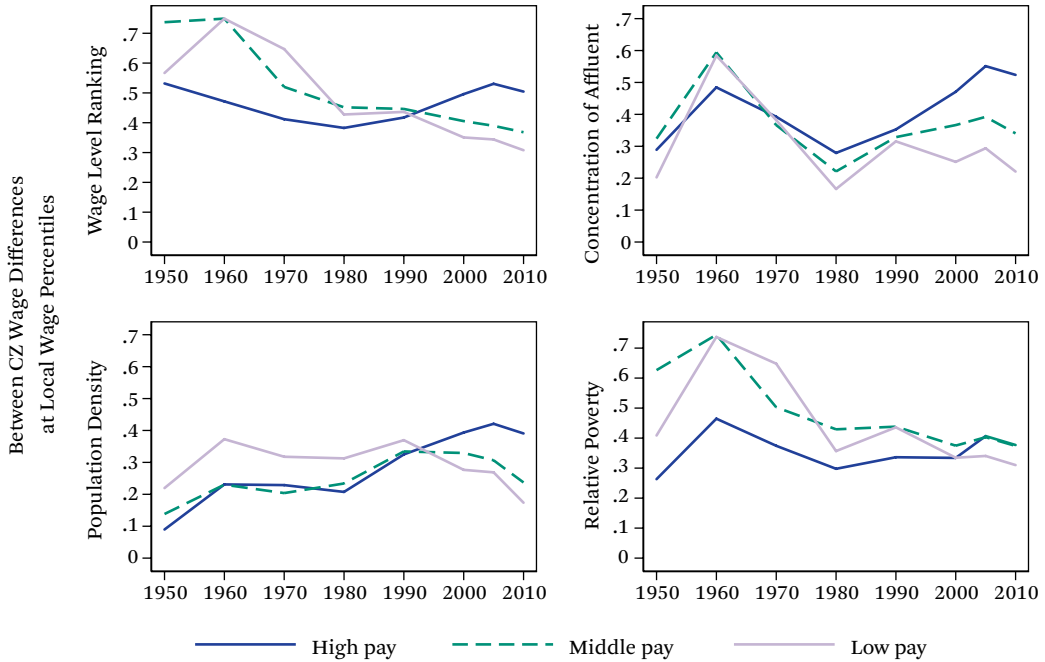
That is, the contemporary copresence of poverty and affluence misidentifies a positive wage trajectory for low-wage workers seeking opportunity in trickle-down “brain hubs” (see also De La Roca and Puga 2017). Alternatively, these shifts might represent a broadly shared leveling of low incomes across labor markets through rent destruction (Sørensen 2000). A critical question is whether the economic opportunities at the bottom and the middle of the wage distribution are more favorable in brain hubs, which based on the geographical stratification literature, we understand as places with higher concentration of affluence, (possibly) lower concentration of poverty, and population density.¹⁶ Is this favorable wage comparison growing alongside the growing polarization of these labor markets? If the patterns detected in figures 2, 3, and 4 reflect low-paid workers increasingly moving to opportunity, such opportunity should be observable.

To address these questions, figure 4 presents the range of low, middle, and high pay across commuting zones. The y-axes display the difference in logged wages across CZs at similar CZ-specific percentiles of wage distributions (10th, 50th, and 95th). Panels show between-CZ wage gaps (clockwise from top-left) of the CZ-specific wage levels, across affluence concentration, across poverty concentration, and among the most and least densely populated CZs.¹⁷ For example, the dark solid line in the top-right panel in year span from 2011 to 2015 shows the wage difference at the 10th percentile of CZs with dense concentrations of affluent households—Washington, D.C., San Francisco, California, and San Jose, California—against wages at the 10th percentile of CZs with few affluent households—Hazard, Kentucky, Poplar Bluff, Missouri, and Jena, Louisiana.

As anticipated, densely populated labor markets, labor markets with a higher concentration of affluent households, and labor markets with fewer poor households tend to have higher rel-

16. We cannot track individuals over time who move from one labor market to another, nor can we track the wage trajectories of lower-wage workers who move into more affluent labor markets. Larger stocks of poor households could conceivably reflect lower wage workers selecting into labor markets with greater opportunity for upward wage mobility. We discuss this in more detail in the conclusion.

17. We compute population-weighted means of commuting zones that are in the top or bottom 5th percentiles of each CZ-level distribution by year, and then measure the gap among low-, middle-, and high-paid work.

Figure 4. Change in Wage Differences Across CZs at High-, Middle-, and Low-Wage Levels

Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).

Note: Percentiles represent locations in CZ-specific wage distributions. Lines represent difference in wages at specific percentiles across CZs, specifically those at or above the 95th percentile minus those at or below the 5th percentile. For example, the solid black line in the lower left indicates the difference in wages at the 95th percentile between the most densely populated CZs (such as New York City and Newark, New Jersey) and the least densely populated CZs (such as Lakeview, Oregon, and Jordan, Montana). High pay refers to wages at the 95th percentile, middle pay refers to wages at the 50th percentile, and low pay refers to wages at the 10th percentile.

ative wages for lower-, middle-, and higher-income respondents (Glaeser, Resseger, and Tobio 2009; Moretti 2012). That is, wages across the whole distribution tend to be higher in affluent and agglomerated labor markets. However, a historical assessment of these comparisons leads to a critical complicating conclusion: low pay has become increasingly similar across commuting zones, whereas high pay has diverged. For example, the top-left panel shows the gaps across the whole distribution of percentiles. In this panel, we observe that the relative wage gap across CZs at the 10th percentile has declined substantially over time. Whereas low wages varied on average by 0.7 across CZs in 1960, this gap declined by approximately 60 percent over time to under 0.3. In 1960, wages among CZs with the highest 10th percentile

wages—Cleveland, Ohio, Chicago, Illinois, Newark, New Jersey, and Buffalo, New York, for example—were higher by a factor of two relative to wages with the lowest 10th percentile wages—West Liberty, Kentucky, Greenville, Mississippi, and Cordele, Georgia, for example ($((e^{0.7}-1)*100 = 101.4$ percent). In 2011–2015, wages among CZs with the highest 10th percentile wages—Minneapolis, Minnesota, San Francisco, California, Washington, D.C., and Boston, Massachusetts, for example—were only 35 percent ($((e^{0.29}-1)*100 = 33.6$ percent) greater than 10th percentile wages in the lowest-paying CZs—Greenville, Mississippi, Gallup, Arizona, Crystal City, Texas, and Valdosta, Georgia, for example.

In contrast, the gap in high wages across CZs has grown from about 0.35 (in 1970, or approx-

imately 42 percent) to more than 0.5 in 2011–2015 (approximately 65 percent). This panel shows 1980 as an important pivot point for increasing wage differentiation for high wages, coinciding with the well-documented economic transition to neoliberal politics and industrial relations. Remarkably, the geographical range of high pay is as high today as it was in 1949, prior to southern income convergence with the North (Lindert and Williamson 2016). Similar patterns are observed across affluence and poverty concentration, as well as population density. We considered whether results might be driven by specific regions or age groups. We replicated figure 4 among southern- and nonsouthern CZs, and among restricted samples of prime-age workers.¹⁸ Across these replications we reached the same results. Considered together, results lead to a general conclusion: compared across the past sixty-five years, geography has never been more consequential for high-wage workers and never less consequential for low-wage workers.¹⁹

Even if the wage gains for low-wage workers in affluent areas have deteriorated in recent decades, might we nevertheless still observe greater relative advantage of low-wage workers in more affluent places relative to poorer ones? Although place-based wage benefits have declined, they are nonetheless present. Perhaps these small gaps are consequential for raising the relative standing of low-paid work in affluent labor markets. To assess this question, we examine the wage bill share of those in the bottom 10 percent and top 5 percent in local areas, shown in figure 5.²⁰ These are computed as the proportion of the total wage and salary incomes held by those in the bottom 10 percent of a CZ-specific distribution, and the propor-

tion of the top 5 percent, over the CZ-specific total sum of wages and incomes. We assess wage bill shares across the logged percentage of affluent households, the percentage of poor households, and population density using locally weighted regression lines estimated separately by year.²¹

We observe no meaningful variation of the wage bill held by those in the bottom 10 percent of the earnings distribution across affluence, poverty, or density distributions. Instead, we observe a general loss over time of the already small holdings of those with low wages. Such workers held about 4 percent of wages in 1950, which by 2010 had declined to around 1.5 percent. In contrast, we observe clear positive associations for high-pay wage bill shares in affluence hubs and in densely populated areas. In contrast, from 1980 onward, variation of the top wage bill held across areas depending on poverty rates is scant. In total, we find that low-wage workers increasingly face relative disadvantage in terms of total earnings held in densely populated, affluence concentrated areas. Any wage boosts afforded to low-wage workers in these areas could well be offset by the larger relative wage share disadvantage.

Cost of Living

How might results of figure 4 be driven by variation in cost of living? Housing is substantially more expensive in San Francisco and New York City than in many rural areas of the South and Midwest, for example. This might level some of the differences we observe across areas. We follow the logic of Moretti (2012) and partially adjust wages based on the year-specific adjusted gross rent of a two- or three- bedroom apart-

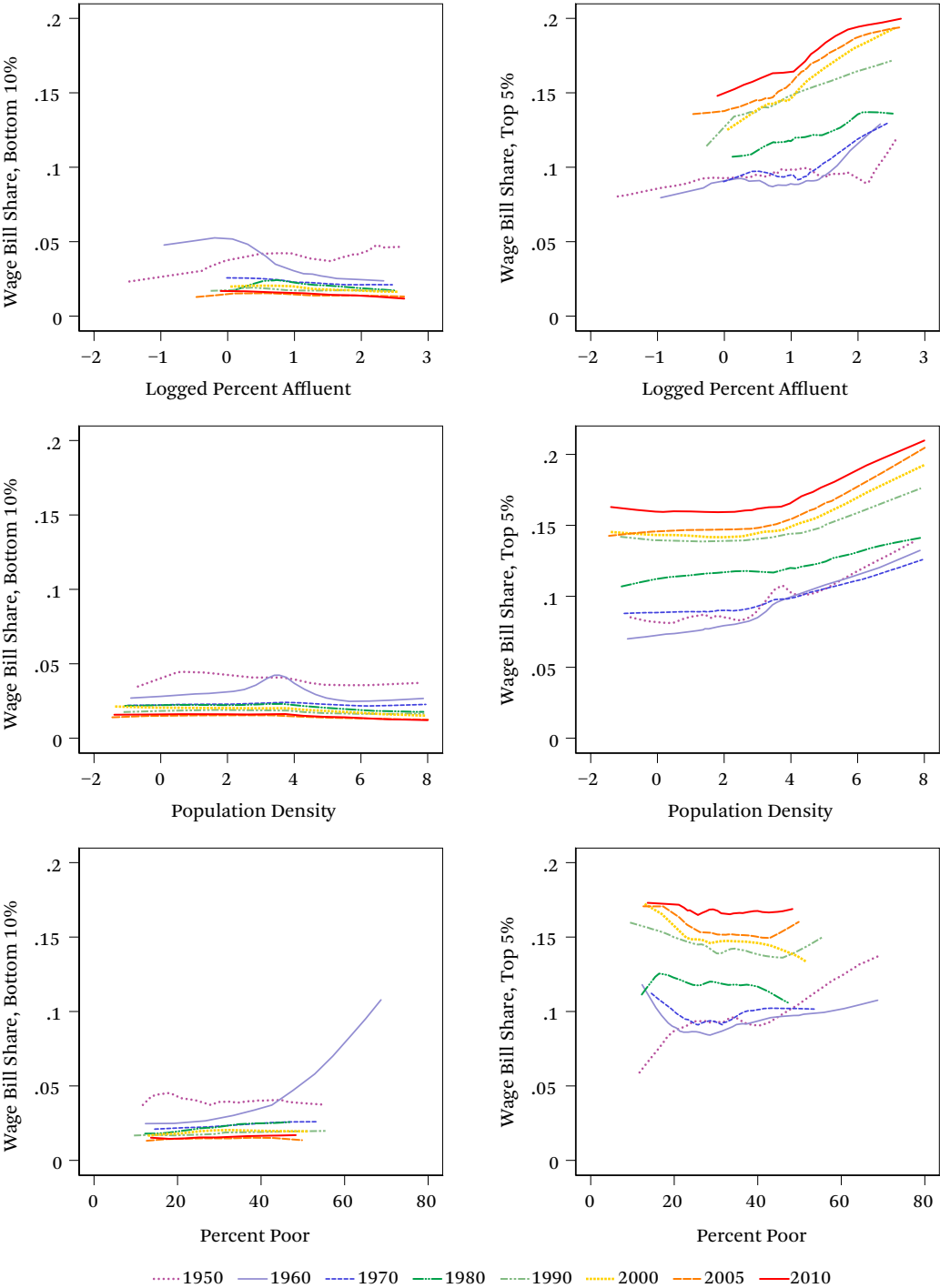
18. Year 1960 is excluded in these replications because no nativity information is available.

19. We also examined counterfactual differences between the lagged wage level at the 50th percentile of less-affluent commuting zones relative to the 25th percentile in more-affluent CZs, to simulate the potential wage change of a typical individual relocating from a more- to a less-affluent CZ. We found that since 2000, middle wages in less-affluent CZs have grown more than lower wages in affluent CZs. The reverse was the case prior to 2000. We take this as additional supportive evidence that moving to more affluent CZs has become a riskier proposition for anyone but high wage workers. Figures are available on request.

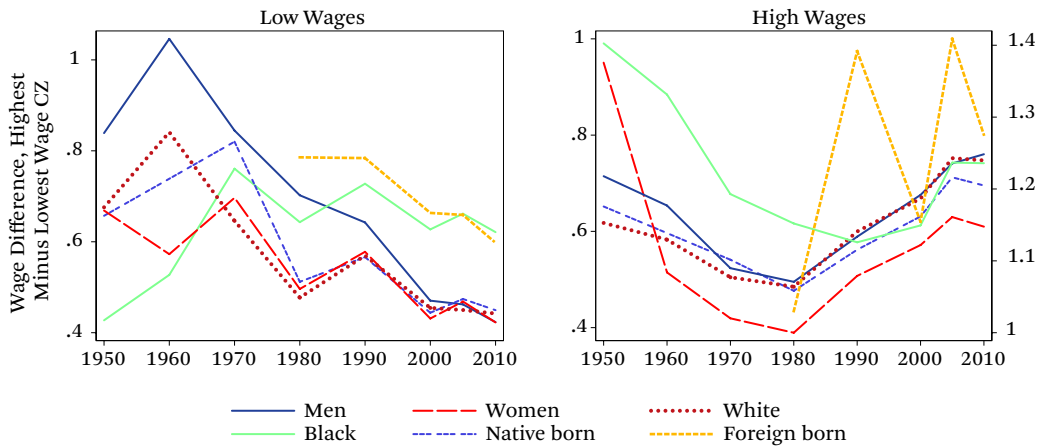
20. We replicated these results at the household level and reached similar conclusions.

21. We show the logged percentage because of the skewed distribution of affluence concentration across commuting zones.

Figure 5. Wage Bill Share Across Affluence, Population Density, and Relative Poverty



Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).
Note: Lines computed from locally weighted regressions of wage bill against variables indicated along the x-axis, separately by year. Bandwidth = 0.3.

Figure 6. Replication of Figure 4, by Sex, Race-Ethnicity, and Nativity Groups

Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).

Note: Figures replicate top left panel of figure 4, which shows the maximum difference of wages across 722 CZs. Right y-axis of right panel is for foreign-born individuals. Foreign born begins in year 1980 because of small number of observations of foreign born workers in years 1950 through 1970.

ment. We then replicate figure 4, which is included in the online appendix.²² Although the separation of top incomes across CZs is attenuated in between 2005–2009 and 2011–2015, results are largely similar. It is thus unlikely that these results primarily reflect local variation of housing costs.

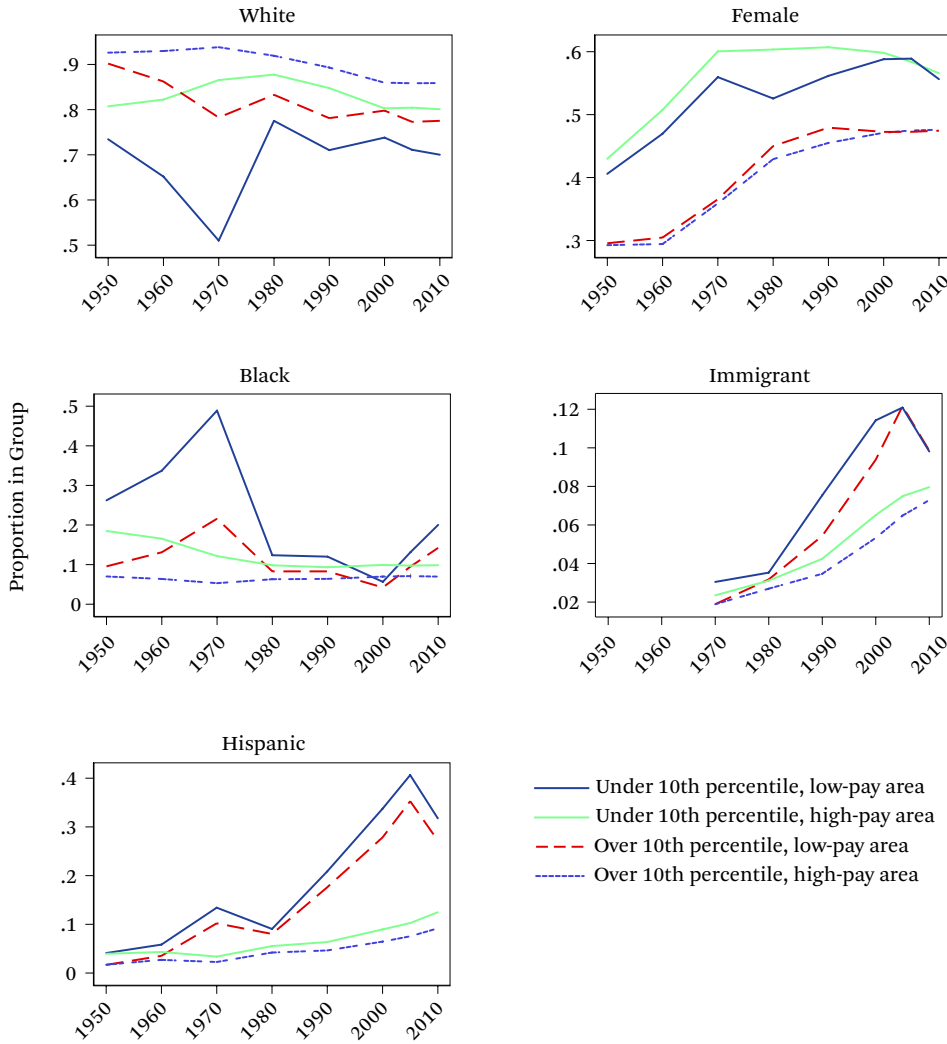
Replication by Group

Care is needed to ensure that labor market differences are not simply reflecting differences in wage setting and residence patterns across gender, racial-ethnic, and nativity groups. Figure 6 replicates figure 4 separately for workers by race, sex, and nativity status. Overall results are largely similar, suggesting that results are not primarily driven by heterogeneity in results across groups. A few of the deviations from main results are notable. For low-paid workers, men experienced the largest relative convergence across CZs over time. Geographic pay gaps grew for low-income black workers between 1949 and 1970 and then declined slightly from 1990 onward. Of course, given the substantial social and political changes during these decades (Mandel and Semyonov 2016), it is unsurprising to observe differences in trends

between white and black workers. Among highly paid workers, we observe substantially greater geographical variation for black and female workers in early decades, but trends largely converge in 1990 and onward. Again, divergence in these earlier decades is understandable against the backdrop of substantial and legally codified discrimination against women and minorities.

Figure 7 shows the group composition of low pay in CZs with the lowest and highest levels of low pay, by decade. A few trends are notable. White workers have been consistently underrepresented in low-paid work, the difference especially pronounced before 1980 in low-paying CZs. Conversely, black, Hispanic, and female workers have been consistently overrepresented among low-paid work in both higher- and lower-paying CZs. Black and female worker representation has declined substantially between 1950 and 2000, but remains disproportionately high. Low-paying CZs have grown rapidly in the concentration of Hispanic workers, but this has not corresponded to a disproportionate concentration of Hispanic workers in low-paid work in low-paying CZs. In total, although figures 6 and 7 illustrate important

22. The online appendix is available at <https://www.rsfjournal.org/content/5/4/77/tab-supplemental>.

Figure 7. Percent of Workers Above and Below 10th Wage Percentile

Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).

group-based heterogeneity in low- and high-wage work, results do not cleanly point to group-based geographical differences in wage setting as primarily driving the results.

Precarious Work

What about job quality? Although pay might be leveling across geographical areas, perhaps

benefits in affluence hubs accrue through job quality.²³ We examine this possibility by examining the rate of part-time work among prime-age men and women with a high school degree or less.²⁴ Unfortunately, census and ACS data do not have information on the multiple dimensions of job quality, precariousness, and contingency (Cappelli and Keller 2013; Kalle-

²³ Unfortunately, census and ACS data do not have consistent measurements of work precarity across the eras assessed.

²⁴ We also examined all prime-age workers and workers with a college degree. Results are substantively similar. We exclude years 1950 and 1960 because of the nature of female employment in these years. Trends in

berg 2013). We therefore use part-time work among prime-age workers with a high school degree or less as a proxy for the broader system of contingent work.

Figure 8 replicates the methods of figure 5 but uses part-time work as an outcome. A few results are notable. First, we observe gendered shifts in part-time work over time. The percentage of male part-time workers has increased over time, and that of female part-time workers has decreased. Second, we observe declining variation across commuting zones based on affluence and poverty concentration. In early years, we see evidence that part-time work was less concentrated in more affluent areas, in areas with lower poverty (for men), and in more densely populated areas. Yet especially since 2000, the associations across CZs have flattened, so that the proportion of part-time employment has become generally uniformly distributed across areas. Comparing across year-specific lowess lines, we observe clear longitudinal growth of male part-time work in more affluent and less poor areas, and little change in part-time female employment in more affluent areas. In total, these results suggest that not only have low wages leveled across CZs in recent decades, but that risk of precarious employment has also become more evenly distributed. Simple correlations by year illustrate these points as well. For example, the negative association between proportion affluence and male part-time work changed from a maximum of -0.48 in 1960 to essentially 0 in 2005–2009 and 2011–2015. For women, it changed from -0.12 in 1950 and -0.17 in 1990 to 0.04 in 2011–2015. The positive association between poverty and male part-time work decreased from a high of 0.73 in 1960 to a low of around 0.25 in 2005–2009 and 0.3 in 2011–2015. Similarly, we replicated fixed-effects regression

models from table 2 predicting part-time work and found an emerging positive and significant association between part-time work and affluence, percentage in poverty,²⁵ and population density, since the year 2000, and a significant decline in the magnitude of the positive association between poverty and part-time work following 1990. Overall, these findings are suggestive that geographical leveling has occurred for both wage levels and employment precarity.²⁶

CONCLUSION

In this research, we ask how wage polarization occurred across local labor markets in the contiguous United States. We examine several dimensions of affluence and low pay across 722 local labor markets, commuting zones, covering the entire contiguous United States, from 1950 to 2015. We first examine the geographical patterns of the residence of affluent and poor households. We then assess the geographical variation of low- and high-end pay. Simply put, our results call into question how beneficial urban agglomeration has been for lower-paid workers in recent decades.

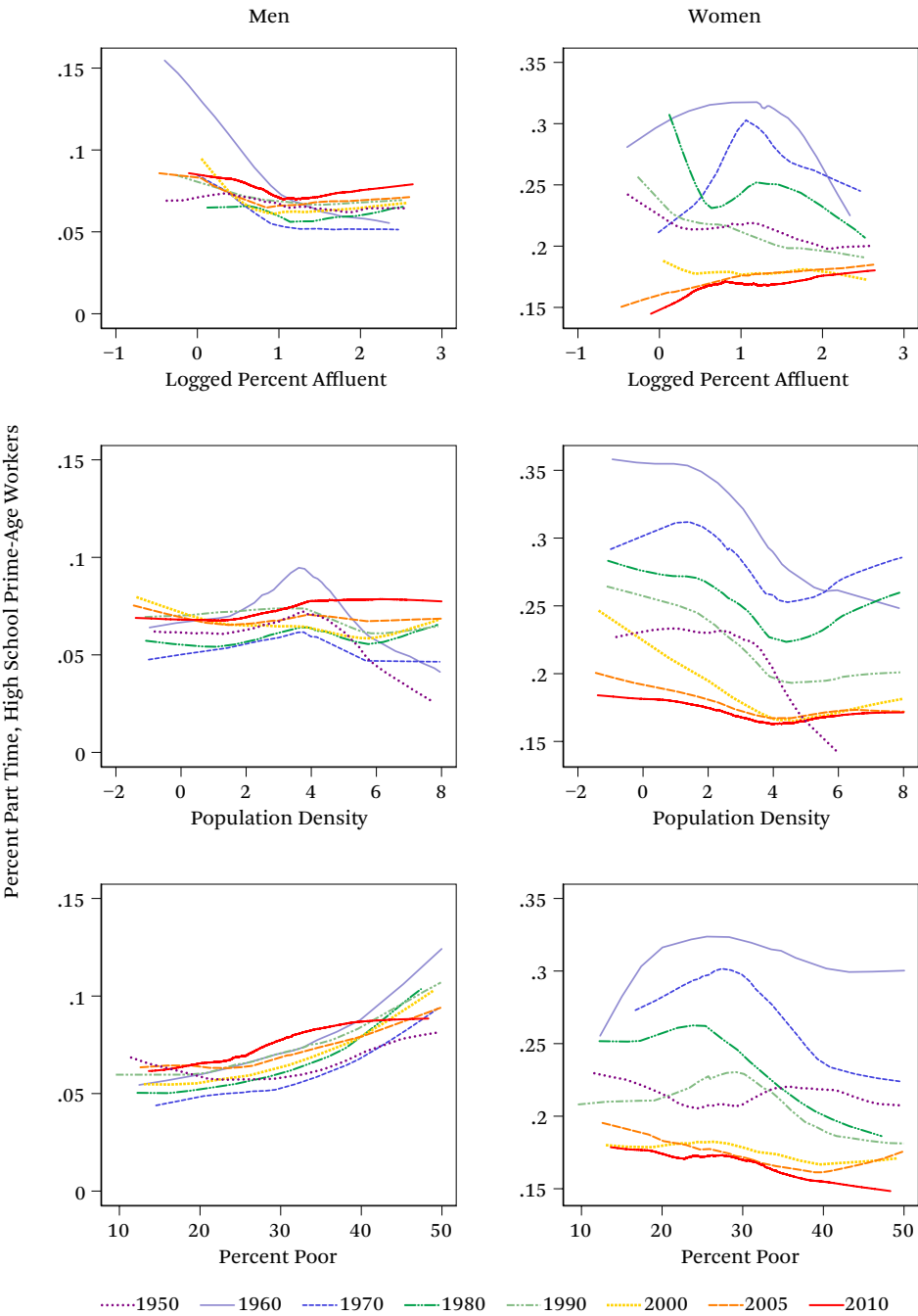
We draw two main conclusions. First, household sorting across labor markets, particularly from 2000 onward, has increasingly resulted in two types of labor markets: polarized and poor. Commuting zones with higher rates of poverty tended to separate from affluent households, and local concentration of affluence has become associated with growth of poverty. Furthermore, affluent and middle-income households have increasingly segregated into different labor markets. Overall, wage polarization has coevolved with two types of labor market polarizations, one internal to labor markets where the affluent live, and one between labor markets, poorer places being increasingly separated from affluent households.

these years do not refute main conclusions discussed in the text (for a more inclusive and multidimensional set of measurements of precarious and insecure work relations, see, in this issue, Lambert, Henly, and Kim 2019; Liu and Nazareno 2019; Pedulla and Mueller-Gastell 2019).

25. Specifically, the inverse of percentage poor.

26. We find one contradictory piece of evidence to our general conclusions: areas with high poverty and with low affluence concentration have higher proportions of prime-age less-educated men not in the labor force. Thus, although the economic conditions of the low end of the labor market are converging across labor markets, access to any form of employment in poorer areas have increased for less-educated men.

Figure 8. Percent Prime-Age High School or Less Working Part Time



Source: Authors' compilation based on 1950–2000 census and 2005–2015 American Community Survey data (Ruggles et al. 2019).

Note: Lines computed from locally weighted regressions of the percent of prime-aged part-time workers in a commuting zone against variables indicated along the x-axis, separately by year. Bandwidth = 0.6.

These findings support recent arguments of the contemporary interdependence of affluence and low-paid labor. For example, Wilmers uses the example of restaurant workers (2017). An important cultural taste of modern affluence is the selection of a dining choice from many restaurants. Such a choice requires the employment of multiple low-paid jobs, such as line cooks and wait staff. Similarly, Mazzolari and Ragusa highlight the reliance of high-earning households on outsourced domestic work, jobs that typically fall to lower-paid, frequently immigrant labor (2013). In sensitivity analyses, we find that affluence concentration was positively correlated with home substitution industry employment, but not similar non-tradable industries. These contrasting correlations emerged after 1990, which roughly corresponds with our results. We also find home substitution employment to uniformly have lower mean, median, and 90th percentile wages relative to workers with a high school degree or less outside home substitution industries. In total, our results support recent arguments of the emergence of a reliance of affluent households on poorer ones.

At the same time, commuting zones with large stocks of poor households have consistently been isolated from affluent households. And growth of poverty, particularly from 2000 onward, associates negatively with the proportion of affluent households. As a sensitivity analysis, we estimated recentered influence function regressions predicting the proportion of affluent households with the proportion of poor households, and we found that the coefficient of poverty was significantly more negative at higher quantiles of the poverty distribution. Thus, entrenched poverty contributes to pushing affluence away. Combined with the earlier results, these findings suggest a broad polarization occurring across local labor markets. Local places tend to be either polarized, increasingly defined by the coresidence of affluent and poor households, or excluded from affluence and largely defined by poverty.

Our second main conclusion is that geography is becoming increasingly important for high-end pay and increasingly unimportant for low-end pay. We find that low-wage differences across commuting zones declined considerably

between 1950 and today, whereas geographical differences in high-end pay are as large as they have ever been in the post-World War II era. Although less-skilled workers do tend to earn higher wages in richer, more densely populated places, the magnitude of these benefits has declined substantially over time. We also document the broadly shared emergence of part-time work for less-educated workers, which we use as a proxy for contingent employment, along dimensions of brain hubs. Thus, not only have low wages converged across places, but so has the risk of precarious work for low-wage workers. In total, we observe starkly diverging trends. Geography is increasingly important for the rich and increasingly unimportant for the poor.

These findings add an additional wrinkle to recent research on low-paying work. Removal of protective rents for workers increases overall inequality, but removes inequality attached to structural positions. Just as the decline of labor union power has reduced the importance of between-group inequality between union and non-union members but increased overall inequality (Western and Rosenfeld 2011) and earnings volatility (VanHeuvelen 2018b), changes to economic markets, social policies, organizational management practices, and social norms—we argue—have led to a reduction of between-place inequality for low-wage workers, but greater overall inequality between the top and the bottom. If economic opportunities, rents, and power resources are being removed among the lower-paid segment of the labor market, it makes intuitive sense that one should observe convergence of wage setting across areas.

Relatedly, Weeden and Grusky note the asymmetric rent destruction and creation occurring at the bottom and top ends of the labor market (2014). That trends of high and low pay diverge suggests that these patterns play out to create contrasting geographical consequences at the tails of the labor market. These changes might create additional challenges for lower-paid workers in affluent areas. Sociologists and social psychologists have noted the importance of relative economic standing for happiness, well-being, and senses of self-worth (for example, Alderson and Katz-Gerro 2016). It may be

that the positive wage gains of low-wage workers in affluent areas correspond with negative social status and psychological burdens.

These findings cast doubt on some of the rosier claims made by scholars of geographical inequality. Moretti, for example, argues that the agglomeration-induced wage gains made by highly skilled workers in brain hubs had widely shared benefits (2012). Similarly, Glaeser and his colleagues argue that the coresidence of poor and affluent households in the same labor market misidentifies contemporary polarization with the poor being drawn to locations of economic opportunity (Glaeser et al. 2009; Glaeser 2012). We confirm their general findings that low wages tend to be higher in affluent areas than in poorer areas. Yet, when we extend historical focus across the whole of the post-World War II era, a leveling of these wage-boosting effects is clearly observable. Whereas low wages differed by 100 percent across labor markets in 1960, they differ by only roughly 35 percent today. That such leveling has occurred at the same time that the affluent have concentrated in fewer places and witnessed a dramatic growth in their wages suggests a slowdown of the broadly shared benefits of urban agglomeration. We suggest that divergence of rent construction and rent destruction across the wage distribution better explain contemporary trends than urban agglomeration (Weeden and Grusky 2014).

We did not find clear evidence that results were primarily driven by group composition across commuting zones based on sex, race-ethnicity, or nativity. Rather, we find that the overall trends applied to many groups. It is beyond the scope of the current research to explain why some group trends, such as the gap for low pay across CZs for black workers, diverge from others. However, we believe future research on these topics would be of great use.

We are skeptical of policies that attempt to reinvigorate declining geographical mobility (Molloy et al. 2011, 2017). Think tanks and popular stories highlight the sharply diverging economic trajectories of rural and urban areas (for example, Strain 2014; Hsieh and Moretti 2015; Lindsey and Teles 2018), leading some to argue that financially incentivizing geographical mobility out of low-income areas into urban cores

would be a silver bullet to the problem of low-wage work, and more generally, economic growth. All that seems to be stopping individuals is the cost to move, local housing costs, or perhaps cultural attachment to place. Our findings suggest that such a focus might place too much emphasis on the upper and upper-middle end of the wage distribution. A critical and often overlooked trend is that bad jobs are increasingly bad wherever one looks. Attempts to shift low-skill workers from one labor market to another might not adequately address the broad leveling of rents among such workers.

Our focus was on the dynamics of polarization across all labor markets of the United States. An important shortcoming of this focus is that it ignores the critical dynamics of wage setting and segregation that occur within large U.S. labor markets. Reardon and Bischoff, for example, find growing income segregation leading to greater income inequality among large cities in recent decades (2011). Lichter and colleagues find increasing place-based segregation within large urban areas (2015). There could well be important heterogeneity occurring below the overall trends we assess. More generally, scholars have thoroughly documented the different challenges of reducing poverty in rural and urban areas (Lichter and Schafft 2016; Patillo and Robinson 2016). Future research might fruitfully assess the qualities of low-wage workers and poor households across labor markets and over time. What occupations and householding characteristics define low-wage workers in affluent and poor places, and what are the wage differences of low-wage workers, adjusted for demographic and occupational characteristics? It might be that wages are higher in affluent areas for low-wage workers when comparing workers with similar age profiles, occupational, and industry characteristics. Similarly, the composition of poor households across areas can reveal important local risk profiles for poverty reduction policy decisions.

Several additional caveats are in order. If more affluent areas have higher rates of development, investment, cultural amenities, public services, and industrial concentration, then these places may offer more lucrative opportunities for workers across the life course. Fur-

thermore, if affluent areas have broader educational and vocational training opportunities, low-wage workers in these areas might be better positioned for upward mobility (Schultz 2019). Additionally, densely populated cities may offer benefits to low-wage minority workers. For example, Devah Pager's audit studies in New York City revealed companies that discriminated more and less against minority applicants (2016). The simple presence of a greater stock of employers in larger areas might allow for greater opportunities to find those who do not discriminate as intensely.

Our study follows labor markets, not individuals, over time, meaning that we might miss important upward wage attainment dynamics for lower-wage workers in more affluent labor markets. We cannot track wage and labor market residence changes at the individual-level with these census data, making this question beyond the scope of the current study. Yet variation in mobility trends across labor markets is an important mechanism of agglomeration identified by both Glaeser and Moretti, and such variation may well offset some of the convergence among low wages that we have documented in this article. Conversely, sensitivity analyses show that labor markets with contemporary high concentration of affluent households also tend to have higher levels of wage inequality. And Raj Chetty and his colleagues show local inequality has dampened intergenerational income mobility in recent decades, suggesting that the current takeoff of top pay might similarly depress upward individual-level wage mobility in these labor markets (2014). Nevertheless, such an argument is speculative, and so future longitudinal work at the individual level is needed to qualify results presented here.

The recent push for minimum wage to be set at living wages and some localities' adoption of \$15 minimum wages is an important development to be examined as future waves of ACS data become available. The Economic Policy Institute identifies forty-two localities that have a minimum wage mandate above state levels (2018). When passed in locations with a high concentration of affluence, such as Seattle, Washington, D.C., New York City, the San Francisco metropolitan area, and Chicago, these

policies may assist in raising the standard of living for low-wage workers in these areas. It may be that future research detects a policy-driven, rather than agglomeration-driven, reversal of the trends documented here. Future research would do well to assess how such local minimum wage policy changes affect the long-run trends documented here.

In total, we argue that wage polarization is a manifestation of negative labor market outcomes for low-wage workers, not only those far removed from affluent labor markets, but increasingly those inside them as well. Geographical location of residence remains important for economic opportunity, but this has become increasingly restricted to the choice of highly paid workers. Overall, our study has demonstrated the important geographical consequences and implications of contemporary changes to low-paying and contingent work.

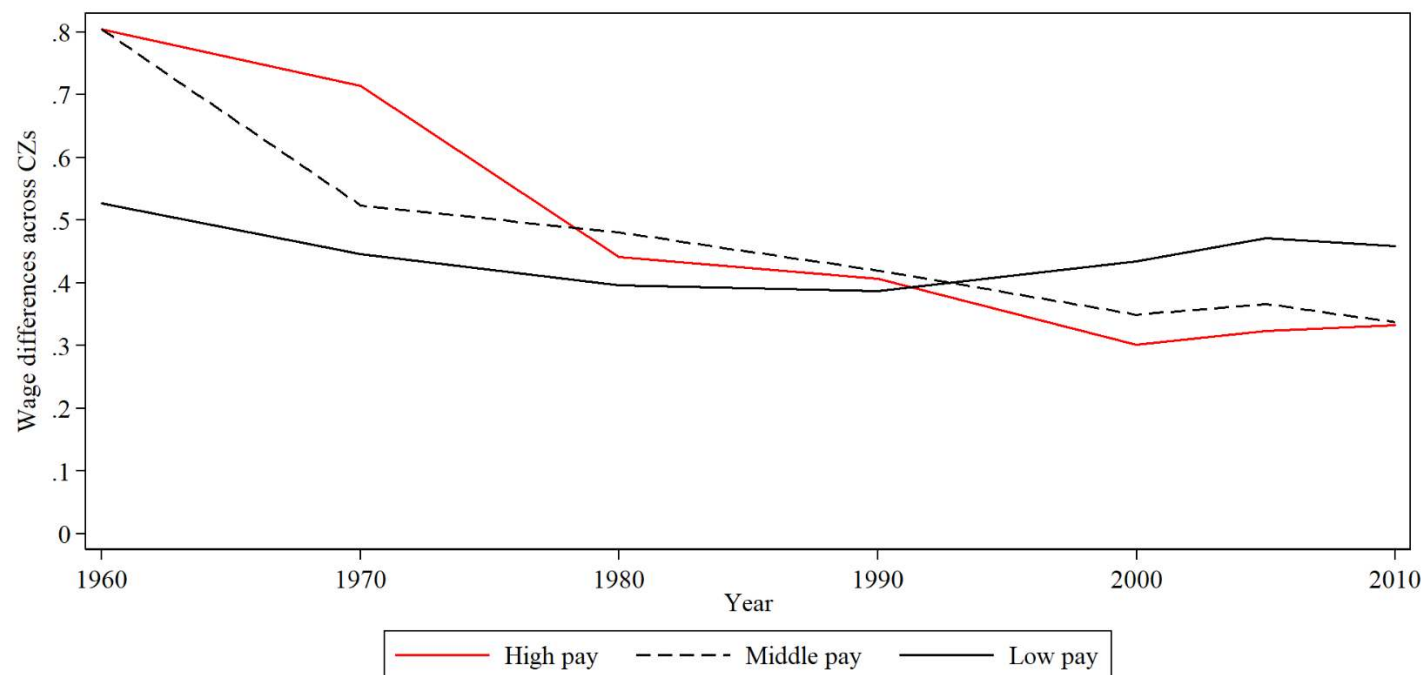
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Appendix Figure 1: Replication of Figure 4, cost of living adjusted

Note: Figure replicates top-left panel of Figure 4, showing maximum wage gap of local wage percentiles across CZs. All Figures and Tables have been replicated using cost-of-living adjusted wages, and we reach the same substantive conclusions.