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SAVING THE HEARTLAND:

PLACE-BASED POLICIES IN 21ST CENTURY AMERICA

By

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The economic convergence of American regions has greatly slowed, and rates of long-term non-employment have even been diverging. Simultaneously, the rate of non-employment for working age men has nearly tripled over the last 50 years, generating a terrible social problem that is disproportionately centered in the eastern parts of the American heartland. Should more permanent economic divisions across space lead American economists to rethink their traditional skepticism about place-based policies? We document that increases in labor demand appear to have greater impacts on employment in areas where not working has been historically high, suggesting that subsidizing employment in such places could particularly reduce the not working rate. Pro-employment policies, such as a ramped up Earned Income Tax Credit, that are targeted towards regions with more elastic employment responses, however financed, could plausibly reduce suffering and materially improve economic performance.

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I. Introduction

Do America's profound spatial economic disparities require spatially targeted policies? Traditionally, economists have been skeptical towards these policies because of a conviction that relief is best targeted towards poor people not poor places, because incomes in poor areas were converging towards incomes in rich areas anyway, and because of fears that favoring one location would impoverish another. This paper argues for reconsidering place-based policies, because (i) convergence has stalled or reversed in recent decades (ii) increasing social problems are linked to a lack of jobs rather than a lack of income and place-based policies may do more than individually targeted policies to create jobs for the not working, and (iii) a modest body of evidence suggests that increasing the demand for labor has a materially greater impact in depressed areas. Depending on wider beliefs about labor markets and migration, place-based policies can either mean more generous employment subsidies in depressed areas, or equivalently generous policies that tilt more strongly towards employment in areas with more non-employment.

America's regions have long displayed enormous economic disparities, but for most of the 20th century, poorer states were catching up rapidly (Barro and Sala-I-Martin, 1991) and relative unemployment rates did not persist (Blanchard and Katz, 1992). Migration flowed to high income regions, and capital was attracted by low wages in poorer areas. Both flows helped incomes to converge. In recent decades, regional income convergence has slowed or even reversed (Berry and Glaeser, 2005, Moretti, 2011), and place-based non-employment has become durable. Over the past 40 years, migration has stopped flowing to high-income regions and declined more generally (Ganong and Shoag, 2017). Economic division across space loom as the backdrop to our political divisions (Autor, Dorn, Hanson and Maslesi, 2016).

In Section II of this paper, we document the hardening of America's geographic divisions, and the rise of American non-employment. Many measures of well-being suggest that not working is a far worse outcome than low-income employment, which motivates our focus on employment rather than incomes. Regional disparities in non-employment are large. The not working rate for 25- to 54-year-old men is 51 percent in Flint, Michigan in 2016 and 5 percent in Alexandria, Virginia.

We divide the U.S. into three regions: the prosperous coasts, the western heartland and the eastern heartland, divided based on year of statehood. The coasts have high incomes, but the

western heartland also benefits from natural resources and high levels of historical education. America's social problems, including non-employment, disability, opioid-related deaths and rising mortality, are concentrated in America's eastern heartland, states from Mississippi to Michigan, generally east of the Mississippi and not on the Atlantic coast. The income and employment gaps between three regions are not converging, but instead seem to be hardening into semi-permanent examples of economic hysteresis.

The European Union has long embraced place-based policies that target distressed areas, but U.S. national policy has typically adopted geographic uniformity. Place-based policies are popular with place-based politicians, but economists often emphasize that a national perspective pushes towards helping poor people not helping poor places. Section III analyzes the economic rationales for place-based policies.

An abundant literature documents agglomeration economies and human capital externalities (Duranton and Puga, 2004, Combes et al., 2008, Moretti, 2011). While such externalities suggest market failure, they do not imply any particular spatial policy. Both New York and Appalachia might benefit from more economic activity and more skilled residents, but we do not know if it is optimal to shift skills and density from New York to Appalachia or vice versa.

A second justification for place-based policies is to insure residents against place-based economic shocks, just as the Federal government already provides some insurance against place-based natural disasters. In 1969, Detroit residents had higher incomes than Boston residents, but today Boston residents are 40 percent wealthier. [1] But smoothing income differences across state would only modestly reduce income inequality. Controlling for states explains only 1.2 percent of the variation in income levels; even the smaller Public Use Microdata Areas (PUMAs) can explain only 7.1 percent of the variation in earnings. Smoothing income differences across smaller geographic areas would distort migration, raise housing costs in low-income areas and potentially even concentrate poverty.

The most compelling case for space-based policy is that one-size-fits-all interventions are woefully inappropriate for regional economies as diverse as Appalachia and Silicon Valley. Subsidizing employment, either at the individual or firm level, makes little sense in an economy as robust as greater San Francisco, where restricted housing supply limits future population

[1] Place of birth strongly impacts economic opportunity (Chetty and Hendren, 2016). Almost 50 years ago, in 1969, the Census also lists Stamford, CT as the wealthiest metropolitan area and McAllen, TX, as the poorest metropolitan. In that year, Stamford was almost three times as rich as McAllen. In 2016, according to the Bureau of Economic Analysis, America's richest metropolitan areas (Stamford, CT, and Midland, TX) are four times richer than the poorest metropolitan area in the U.S. (McAllen, TX).

growth. If non-employment is much more sensitive to subsidy in West Virginia, then larger pro-employment subsidies in that state are likely to reduce suffering more.

Place-based policies may not mean large-scale transfers to distressed areas, but place-based tailoring of policies to particular locales. For example, a bevy of current social welfare policies, including Section 8 Housing Vouchers, the Supplemental Nutritional Assistance Program (SNAP), and Disability Insurance, currently tax earnings implicitly. The implicit taxes on housing vouchers and food stamps could be reduced for low income workers from 30 percent to 20 percent in areas where employment is particularly responsive to the returns to working.

Indeed, even the most diehard opponent of place-based redistribution should see the logic of tailoring Federal policies to local labor market conditions. Standard social policy rules, like the Bailey (1976)—Chetty (2006) formula for unemployment insurance, depend on parameters that differ across space. If non-employment is particularly harmful in one location and particularly sensitive to public policies, then that diehard could still support a place-based revenue-neutral twist that reallocates funds from benefits that subsidize not working to benefits that encourage employment, without encouraging migration or raising housing prices.

We use a modified Bailey-Chetty formula to analyze benefits for the not working and for marginal workers. The formula depends on two parameters: the ratio of the externalities associated with non-employment to the wage of low-income workers, and the heterogeneous response of employment rates to policy interventions. In Section IV, we look for heterogeneous responses by testing whether exogenous shocks reduce non-employment more in high non-employment states. We first use industrial composition "Bartik" shocks. These shocks do reduce not working rates more in states where the average not working rate is higher. China trade shocks, as identified Autor, Dorn and Hanson (2013), also impact not working rates more in commuting zones with higher historic levels of non-employment. Military spending shocks, used by Nakamura and Steinsson (2014), also have a larger impact on not working rates in states where the average not working rate is higher, but the difference is statistically insignificant. Our results are far from definitive, but they do support the perfectly unsurprising view that you can reduce non-employment more in places where non-employment is currently high.

Section V follows Gordon (1973) and focuses on the externalities of non-employment, which includes fiscal costs to the state, costs born by friends and family, and possibly also spillovers that encourage more non-employment (Topa, 2001). We calibrate these costs to be range from .22 to .38 times the typical wages earned by low-income workers, but recognize that these numbers are quite debatable. Using these estimates, we find that the generosity of pro-

employment program relative to non-employment benefits should be higher in West Virginia than in Nebraska. Subsidies should skew more towards employment in high employment elasticity regions when the coefficient of relative risk aversion is low.

We then turn to a taxonomy of place-based policies, and discuss their costs as well as benefits, including distorted mobility, capitalization, and other deadweight losses. Place-based policies do seem to get capitalized into housing prices, especially in depressed areas, but evidence for capitalization into rents is weaker (Busso, Gregory and Kline, 2013). The impact of spatially heterogeneous policies on migration is a long-standing question in anti-poverty policy, and much of the best work on this topic preceded welfare reform, when state differences in AFDC payments could be quite large (Borjas and Hilton, 1996).

We end with a discussion of plausible policies that might respond to spatially heterogeneous employment responses to policy. We discuss strengthening employment subsidies, either to the firm or to the worker, in high non-employment states. We discuss tilting the incentives that community colleges face to provide job counseling and employment-appropriate vocational skills. Finally, we mention policies that might have benign spatial effects even if they are apparently neutral. A flat per dollar employment subsidy would presumably have a larger effect in low cost states where prices are lower.

II. The Geography of Not Working America

A belief in individual upward mobility reduces the desire for income redistribution (Alesina, Morales and Stantcheva, 2016). Similarly, a belief in the upward mobility of regions limits the demand for place-based policies. America has long tolerated dramatic economic differences across space, partially because people regularly moved from poor places to rich places and capital flowed freely from high wage areas to low wage areas. In this section, we document five trends that suggest that this mobility has fallen considerably and that America appears to be evolving into durable islands of wealth and poverty. At the broadest level, the nation can be divided into its wealthy, costly coasts, a reasonably successful Western Heartland and a painfully not working Eastern Heartland. These differences are driven mainly by historic differences in human capital and the economic dislocation caused by deindustrialization.

The Closing of the Metropolitan Frontier

America has long been a nation with enormous spatial differences in income. In 1950, America had 18 states with per capita earnings that doubled the per capita earnings in Mississippi. In 2016, Mississippi is still America's poorest state, but there is no state with double its per capita income. Many of Mississippi's poorest residents went north to the factories of Chicago and Detroit (Smith and Welch, 1989). Industry flowed south, encouraged by pro-business policies, like Right-To-Work laws (Holmes, 1998). America's western frontier may have closed at the end of the 19th century, but there was still a metropolitan frontier where workers from depressed areas could find a more prosperous future.

Five facts collectively suggest that this geographic escape valve has tightened: declining geographic mobility, increasingly inelastic housing supplies in high income areas, declining income convergence, increased sorting by skill across space, and persistent pockets of non-employment. Together these facts suggest that even if income differences across space have declined, the remaining economic differences may be a greater source of concern. Consequently, it may be time to target pro-employment policies towards our most distressed areas.

Figure 1 shows that between 1950 and 1992, inter-county mobility never dropped below six percent. Since 2007, the share of American residents who moved across counties has never exceeded 3.9 percent. The first steep drop occurred between 1990 and 1995, and then another dip occurred after 2005. This decline in cross-county mobility is mirrored by the drop in the within county mobility rate which fell from over 13 percent in the 1950s to under seven percent. Declining mobility appears among both renters and owners; the change is not merely under-water borrowers held in place by their mortgages.

[Figure 1]

The great wave of post-war mobility included the Great Migration of African-Americans north, the nationwide move to the sunbelt, and massive suburbanization. In these previous migrations, as had been true throughout almost all of American history, housing was supplied abundantly to meet migrants' demand. Suburbanization itself can be seen as a massive shock to housing supply, generated by cars and highways (Baum-Snow, 2007), that enabled the African-Americans coming north to occupy urban apartments (Boustan and Margo, 2013). The growth of the sunbelt reflects a combination of economic resurgence, the taste for warm weather, and few restrictions on the mass production of housing (Glaeser and Tobio, 2007).

Moreover, the African-American migrants to the north had little to lose by departing the Jim Crow South. As Schleicher (2017) emphasizes, poorer Americans today are held in place by

public benefits, such as housing vouchers, which can be difficult to carry across state or even county lines. Ostensibly Federal programs, such as Medicaid and Temporary Aid to Needy Families (TANF), are administered at the state level. A move across states will require a new application that may not succeed.

Migration has both declined and become less directed towards high-income areas (Ganong and Shaog, 2017). The unskilled flooded into the high-income areas between 1940 and 1960, presumably bringing wages down, but they did not between 1980 and 2010. Similarly, Dao, Furceri, and Loungani (2017) show that interstate migration due to labor market shocks has declined since the 1990s.

Low income workers still receive significant wage gains from migrating to high income areas, but the housing-related costs of moving to those areas has grown. Housing costs within skilled cities have risen particularly dramatically (Glaeser and Saiz, 2004). Between 1977 and 2017, real housing prices in Detroit were flat according to the Federal Housing Finance Agency repeat sales index, while real housing prices in Boston increased by 165 percent and real housing prices in San Francisco increased by 285 percent. Many authors associate higher housing prices with stringent land use regulations, especially in better-educated communities (Gyourko, Saiz and Summers, 2008, Glaeser and Ward, 2009).[2]

Throughout most of American history, economic productivity was accompanied by near elastic housing supply. The settlers who moved to richer, western agricultural land in the 19th century built their own inexpensive balloon-frame homes. The farmers and immigrants who came to Chicago in the 19th century readily piled into overcrowded tenements. New York City built over 100,000 units annually in the early 1920s when the city experienced its post-World War I boom. Silicon Valley has exploded as an engine of American innovation, but it is practically synonymous with stringent land use restrictions, including some areas with 60-acre minimum lot sizes. Hsieh and Moretti (2017) estimate that these restrictions have led to a misallocation of labor that has significantly reduced America's overall G.D.P.

The skilled do still more towards higher skill, higher wages areas, helping to ensure that skilled areas are become more skilled over time. This is illustrated in Figure 2, where we see that prime male migrants are significantly better educated than the non-migrant population in the PUMA that they left.

[2] One plausible explanation for the relationship between regulation and education is that more skilled people are also better at organizing into groups that oppose new construction, such as Greater San Francisco's *Save the Bay Association* (co-founded by the wife of Berkeley's Chancellor Clark Kerr).

[Figure 2]

Berry and Glaeser (2005) report a robust correlation between the change in the percent of the population with a college degree and the initial share of the population with a college degree in the 1970s, 1980s and 1990s across metropolitan areas. Figure 3 shows that same relationship across PUMAs between 1980 and 2010. The increasing segregation of the skilled matters because the skill level of a locality is strongly correlated both with the levels of earnings for non-skilled workers (Moretti, 2004), and with longer-term growth of incomes and population (Glaeser and Saiz, 2004).

[Figure 3]

Increased geographic sorting by skill probably reflects a combination of restrictions that stymie the construction of affordable housing and workplace complementarities between educated employees.[3] The innovation of the skilled appears to increasing employ other skilled workers. Henry Ford's automated assembly lines depended on tens of thousands of less skilled workers, and hence his skills strongly complemented less skilled labor. Bill Gates' innovations primarily employed highly skilled software programmers.

Declining in-migration to high wage areas has been accompanied by a decline in the convergence of incomes across states and metropolitan areas. Barro and Sala-I-Martin (1991) document the striking convergence in per capita income levels across U.S. states between 1880 and 1980. This convergence is the backdrop for the shrinking gap between incomes in Mississippi and the rest of the U.S. Berry and Glaeser (2005) show that by the 1990s, changes in metropolitan area incomes were no longer negatively correlated with initial per capita incomes. Ganong and Shoag (2017) find that the relationship between state-level changes in per capital and initial per capita income was much weaker from 1990 to 2010 than from 1940 to 1960.

[Figure 4]

Figure 4 shows the convergence of log median incomes across 542 Public Use Microdata Areas (PUMA) between 1980 and 2010 for prime men. The coefficient is -0.16, which is far less than the -2.4 coefficient that Ganong and Shoag (2017) report for states between 1940 and 1960. Even that modest income convergence may be a spurious reflection of measurement error in the

[3] Berry and Glaeser (2006) find that the correlation across industries between the education levels of managers and the education level of workers increased significantly between 1970 and 2000, which supports the view that skilled workers increasingly complement each other at work.

1980 variable. When we instrument for log median income with the logarithm of the 10th percent and the 90th percentile income in 1980 (the r-squared of the first stage regression is .85), we estimate

$$(1)\ Log\left(\frac{Median\ Income_{2010}}{Median\ Income_{1980}}\right) = \underset{(.46)}{-.32} + \underset{(.04)}{.01} \cdot Log(Median\ Income_{1980})$$

Standard errors are in parentheses. Hence it seems plausible that true income convergence has disappeared at the PUMA level as well.

The Rise of Not Working Men

This persistence of geographic barriers within the U.S. has coincided with the dramatic increase in not working rates among men within the U.S., which primarily reflects men leaving the labor force. The share of prime aged males who are not in the labor force has grown from under four percent during the 1950s to over ten percent today.[4]

Throughout this paper, we focus on the total rate of not working among men rather than unemployment or labor force participation. We define the not working rate as the share of men who are not currently employed, or one minus the employment to population rate for prime men. We take the view that the distinction between unemployment and labor force participation – does the person say that they want a job – is relatively arbitrary since almost all of the not working would presumably work if the price was right.[5] In many cases, those who are not now looking for a job will nevertheless return to employment in a short period of time. When we examine prime men whose monthly Current Population Survey responses can be linked for all eight months, we find that 67 percent of men who left and re-entered employment during the 16-month CPS window recorded at least one month that they were not in the labor force.[6] Coglianese (2017) refers to these men who leave and re-enter the workforce as 'in-and-outs', and we believe it is important to distinguish these men who are temporarily absent from the labor force from the long-term not working.[7] In addition, the expanding role of disability insurance relative to unemployment insurance (Autor and Duggan, 2003) may mean that an increasing share of

[4] Appendix Figure 1. Appendix Figure 2 shows a steady rise in female labor force participation through the 1990s and then a leveling off.

[5] See Clark and Summers (1979).

[6] The CPS consists of a 4-8-4 rotation structure, where households are interviewed for four months, rotate out of the panel for eight months, and are then interviewed for an additional four months. We use the method developed by Drew, Flood and Warren (2014) to match respondents across months.

[7] In addition, over shorter time-horizons, we find that 14 percent of men who were recorded as unemployed in the first and last month of a four-month response window reported a single month where they left the labor force between two months where they were unemployed, a potential sign of measurement error in the survey.

individuals who would once have classified themselves as unemployed now list themselves as out of the labor force.

Blanchard and Katz (1992) showed a practically non-existent relationship between the unemployment rate in 1975 and the unemployment rate in 1985 across states. That non-relationship supported the idea that geographic differences in the not working rate are a temporary phenomenon rapidly undone through migration and cyclical shocks. Figure 5 shows the relationship between the male not working rate in 2010 and the male not working rate in 1980 across PUMAs. The correlation between the two rates is 0.79. Moreover, the relationship shows diverging not working rates because the coefficient on the 1980 not working rate is 1.08, which means that the growth in the not working rate is positively associated with the initial not working rate.

[Figure 5]

Figure 6 shows the time series of not working men split into three categories: unemployed (not employed and actively seeking work), not in the labor force but wanting a job, and not in the labor force and not wanting a job.[8] The share of prime-age males who are not in the labor force and do not want a job shows a steady upward trend. The share that is unemployed undulates, severely peaking at almost ten percent during the Great Recession. The third category, not in the labor force but still wanting a job, has held steady at slightly less than two percent.

[Figure 6]

We prefer to focus on the distinction between long-term and short-term not working, where long-term not working is more associated with leaving the labor force and short-term not working is more typically associated with unemployment. Figure 7 includes both the total not working rate and the share of men who been without a job for over a year, using data form the Annual Social and Economic Supplement Survey (previously known as the March Current Population Survey).

[Figure 7]

[8] We note that some men who state they want a job may be unable to start a job immediately. However, we believe it is instructive to decompose not working men into those who have a stated preference for future employment and those who do not.

Figure 8 shows the not working rate by cohort and age. Between 25 and 35, the cohort born in 1940 displayed the least non-employment. The three middle cohorts had roughly the same not working rates. The cohort born in 1980, that turned 27 just as the Great Recession hit, experienced visibly more non-employment at younger ages. The cohort born in 1970 showed visibly more non-employment between 35 and 45, and the cohort born in 1960 showed more non-employment between 45 and 55. In all cases, these bumps presumably reveal the impact of the Great Recession.

[Figure 8]

Figure 9 shows divisions by race. African-Americans have significantly more non-employment than whites, especially after the mid-1980s. Hispanics initially experienced non-employment rates between those of non-Hispanic whites and African-Americans, but since 2005 the non-employment rate for Hispanics has come for closer to the white non-employment rate.

[Figure 9]

The Misery of Not Working

We focus on not working, rather than income inequality, throughout this paper because we see it as a far greater problem. There is significant correlational evidence suggesting that misery haunts the lives of the long-term not working. The next figure show happiness levels by work status next using data from the Behavioral Risk Factor Surveillance System (BRFSS).

[Figure 10]

In the figure, we compare the employed earning over $50,000 per year, the employed earning $35,000 to $50,000 per year, the employed earning less than $35,000 per year, and the not working, and show the share of the male population in each group that reports a low level of life satisfaction. This number is quite low among those earning more than $35,000 per year. Low life satisfaction rises for those who are employed but earning less than $35,000 per year, but low life satisfaction is much higher among those who are not employed. Almost 20 percent of the not working in the eastern heartland report a low level of life satisfaction.

Clark and Oswald (1994) also report that unemployment has a much more negative impact on happiness than low earnings. Hajek (2013) estimate the relationship between unemployment and

unhappiness with individual fixed effects and finds a significant negative effect, especially if the unemployment is described as involuntary. Winkelmann (2014) similarly finds the happiness drops significantly after an individual becomes unemployed.

Happiness is not equivalent to utility. Parents of young children, for example, are typically less happy, but they are presumably compensated in other ways.[9] Yet it is hard to see what benefit is offsetting unhappiness among the not working.

Non-employment is also strongly correlated with mental health problems. A large literature, surveyed by Platt (1984), also connects suicide and unemployment. More recent studies include Kposowa (2001) and Blakely et al. (2003). Over 30 percent of the not working report having more than ten days of not good mental in the past month. Once again, the gap between not working and poor but employed is much larger than the gap between poor and rich employed workers.

[Figure 11]

Opioid use is another market of pain associated with non-employment, as highlighted by Krueger (forthcoming). Like suicide, opioid use may be another consequence of non-employment. Since opioids can also lead to addiction and death, they also are an added cause of social pain.

The Geography of Not Working

We now turn to the geography of not working in the U.S. We begin with two maps of the United States. The two maps show the geography of prime-aged male non-employment in the U.S. in 1980 and 2015. Data comes from the Census and we use consistent Public Use Microdata Areas (PUMAs). The 2015 data is based on three years of the American Community Survey (2014 to 2016).[10]

The 1980 map shows that fewer than ten percent of men were not employed in 1980 in much of the western U.S. and in the Northeastern corridor. Coastal California and much of the Midwest and Southeast had non-employment rates between ten and 15 percent. Rates over 15

[9] The residents of rust belt cities were less happy during the 1940s and 1970s, but they were presumably compensated by higher wages (Glaeser, Gottlieb and Ziv, 2014).

[10] There are slight population differences between decennial Census data, used to create the 1980 map, and American Community Survey data, used to create the 2015 maps. Moreover, the 2015 PUMAs are defined differently than the consistent PUMAs used from 1980 to 2000. Maps look broadly similar using 2010 data.

percent were only seen in Appalachia, and a few isolated parts of lower density America, include a PUMA in Arizona, upstate New York, and a few parts of California.

[Figure 12]

The 2015 map shows the non-employment rate has risen almost everywhere, but the Northeast Corridor and much of the western U.S. still remain relatively more employed. Non-employment is high in the far west, except for the areas around Los Angeles, San Francisco and Seattle and in a great swath of middle America that runs from Louisiana up to Michigan. Appalachia remains a place of tremendous economic dysfunction.[11]

[Figure 13]

Figure 14 shows a map of female not working rates in 2015. Women are more likely to work in northern areas, whether in the east or the west, and less likely to work in southern areas. If we regress the change in prime-aged male not working rates on the change in prime-aged female not working rates at the PUMA level between 1980-2010, we find the R^2 is only 0.094. These differences seem as likely to be driven by cultural norms as by economic distress.[12]

[Figure 14]

The shifts in male and female employment are not particularly correlated with one another, meaning that the declining male employment rates reflect economic distress that does not seem to be offset by increases in female labor force participation.

Figure 15 looks at long-term (over 12 month) not working, and shows there is also strong divergence since 1980. For every extra percentage point of men who were long-term not working in 1980 (the first year we can calculate this number), the growth in long-term not working increases by 0.82 percentage points between 1980 and 2014.[13]

[Figure 15]

[11] Appendix Figure 3 shows a map of the growth in not working rate, which is particularly high in a low diagonal swath that begins in west Texas and runs through Appalachia up to Michigan.

[12] Appendix Figure 4 shows that in 1980, female non-employment was more common everywhere and was particularly high in Appalachia.

[13] Appendix Figures 5 and 6 show that there still is convergence of non-employment rates at the state level, but it has gotten weaker over time.

Hall (1972) documented that unemployment was slightly higher in higher wage cities, suggesting that workers were being compensated for greater risk of not being employed.[14] Figure 16 shows the relationship between the not working rate and incomes across U.S. states using 2014-2016 averaged data. The relationship is decidedly negative.

[Figure 16]

These previous maps inspire our division of American into three groups: the coastal states, the eastern heartland and the western heartland. The PUMA maps suggest that many states could be usefully divided. Inland California looks quite different from the San Francisco Bay. Yet many data sources contain only state identifiers, so we will use state boundaries. We refer to those states that were formed prior to 1840 as the eastern heartland and those states that were constituted after 1840 as the western heartland.[15]

Figure 17 shows the growth rates by region. The coastal states have seen their real economies grow by 330 percent over the past 40 years. The western heartland has grown by 461 percent over the same period. The eastern heartland has experienced the most sluggish growth: 181 percent.[16]

[Figure 17]

The parallel growth in G.D.P. between the coasts and the western heartland can be divided into growth in G.D.P. per worker, shown in Figure 18, and growth in the number of workers, shown in Figure 19. While per capita G.D.P. growth was faster in the coasts, employment growth has been far faster in the western heartland. The difference may reflect far more elastic housing supply in the western heartland that welcomes workers in response to rising productivity.

[Figure 18]

[Figure 19]

The trends in GDP are matched by the trends in the not working rate. Figure 20 shows the prime-aged male not working rate since the late 1970s. Before the recession of the early 1980s,

[14] Appendix Figure 7 shows this fact in 1980, but this pattern in now gone.

[15] Appendix Figure 8 shows the division.

[16] Appendix Figure 9 shows that the coastal states have largest G.D.P. throughout the entire time period, the Western Heartland's G.D.P. surpassed the Eastern heartland's G.D.P. in 2004.

non-employment was roughly comparable in the coasts and the eastern heartland. The western heartland had the lowest levels of not working. Since the year 2000, the ordering has been stable. The not working rate has been highest in the eastern heartland and lowest in the western heartland. The coasts are in between.[17]

[Figure 20]

Figure 21 shows the mortality rates between the three regions for prime-aged males. Between the late 1960s and the early 1980s, mortality fell smoothly for all three regions and the ordering was stable. The western heartland was the healthiest region of the country. During the early 1980s, male mortality rose in the coasts, partially reflecting the scourge of AIDS. Since the 1990s, the eastern heartland has been the outlier with relatively high, and even occasionally rising levels of mortality for prime-aged males. If we seek to understand the striking fact of rising prime-aged male mortality, noted by Case and Deaton (2015), we look in the Eastern Heartland.

[Figure 21]

The next map shows rate of opioid prescription levels per capita across the U.S. These are particularly high in the low employment areas of the eastern heartland.

[Figure 22]

A final social problem is imprisonment, which impacts a significant share of the male population in many states. Figure 23 shows male imprisonment rates in the three regions.[18] Until the mid-1990s, imprisonment rates were generally higher in the coasts than in the western heartland. Between the mid-1990s and 2010, the western heartland had the highest imprisonment rate. Now, both heartlands have imprisonment rates that are dramatically higher than the imprisonment rate on the coast.

[Figure 23]

Why Does the Not Working Rate vary across America?

[17] Appendix Figure 10, 11, 12 and 13 examine not working rate patterns by region, race and gender. Patterns for whites match the overall trends. African-American non-employment is particularly high in the eastern heartland, and roughly equal in the western heartland and the coasts. Hispanic not working rates are similar across all three regions. Female non-employment is actually highest in the coasts.

[18] Appendix Figure 14 shows this data in map form

The rise in the not working rate surely reflects a combination of stagnant demand for less skilled workers, and a rising unwillingness to work at low wages, because of a more generous public and private (e.g. working spouses) safety net, better entertainment options (Aguiar, Bils, Charles and Hurst, 2017) or changing preferences. Since 1999, wages at the bottom of the labor market (10th percentile) have been higher than they were in the 1970s, so rising rate of not working reflect shifting labor supply.[19] While perhaps not all of those not working could get an $8.90 per hour job in 1999, many surely could and chose not to work for such low earnings.

There is a large literature examining the rise of the not working rate across the US, including Eberstadt (2016), Coglianese (2017), and the Council of Economic Advisers (2016). Abraham and Kearney (2018) analyze the causes of rising non-employment since 1999. They credit labor demand side factors (competition with China and robots) with one-third of the decline. Supply-side factors account for less than one-tenth of the change in their analysis, but much of the overall trended remains unexplained. Cross-sectional evidence confirms a tight negative relationship between changes in earnings and changes in the not working rate, supporting the importance of shifting labor demand rather than labor supply. Figure 24 shows the -0.63 correlation between changes in median income at the PUMA level and changes in the male not working rate. The correlation with 10th percentile earnings is even stronger.

[Figure 24]

Across PUMAs, the not working rate can be partially explained with the combination of education and industrial history. The first regression of Table 1, we find that 33 percent of the variation in male not working rates across PUMAs in 2010 can be explained by two education variables: the share of the men without a high school degree and the share of men with a college degree.[20] This effect combines both the direct impact of education and any of the human capital externalities, identified by Rauch (1993) and Moretti (2004). In the second regression, we include the share of male workers in the PUMA in durable and non-durable manufacturing in 1980 and the r-squared rises to 0.41.[21] A history in durable manufacturing, which was particularly prevalent in the Eastern Heartland, predicts more non-employment today.[22] A history in nondurable manufacturing, which was more prevalent in the Western Heartland and the Southeast, predicts less non-employment. The third regression shows the impact of adding two

[19] Although real hourly wages for the 10th percentile of the U.S. male income distribution were lower in the 1980s and 1990s than they had been in 1979, by 1999, hourly real wages had recovered.

[20] Appendix Figures 15 and 16 show the evolution of these variables over time.

[21] Appendix Figure 17 shows the share of manufacturing across the U.S.

[22] As Goldin and Katz (2009) document, industrial areas saw less reason to invest in education.

regional variables, which raise the r-squared to 0.48: January and July temperatures. Higher January temperatures are associated with more non-employment, while higher July temperature are associated with less non-employment.

[Table 1]

The next three regressions show the impact of the same variables on median incomes. Almost universally, the same variables that are associated with higher median incomes are also associated with lower not working rates. The one prominent exception is durable goods manufacturing, which is associated with higher not working rates and higher wages. One interpretation of this fact is the durable manufacturing industries developed the largest gap between wages paid to incumbent workers and the reservation wages of not working outsiders.

As a final exercise, we ask whether differences in political institutions, which are often credited with cross-country gaps in economic performance, can explain America's regional disparities. We look at three different state-level policy measures: corruption convictions, right-to-work laws (following Holmes, 1998), and occupational licensing laws (which may capture local opposition to entrepreneurship).[23] We do not use instruments and we are well away that few of our variables are truly exogenous. These regressions use individual level data, with errors clustered at the state level.

[Table 2]

The first column shows the raw not working rates between the three regions, controlling for nothing else. In the second regression, we control for individual education, which completely wipes out the not working gap between the eastern heartland and the coasts, but makes the gap between the western heartland and the coasts larger. In the third regression, we control for the share of men in the PUMA that have college degree, which has a robust negative effect on the not working rate.

In the fourth regression, we control also for three state variables: corruption convictions, right-to-work laws, and the share of the population that has an occupation license. Only occupational licensing has a significant positive effect on the not working rate, and this variable also does little to explain the western heartland.

[23] Heterogeneity in these variables across states are shown in Appendix Figure 18, 19 and 20.

Table 3 repeats the final regression in Table 2 for 1980, 1990 and 2000. With historical perspective, the western heartland gap looks unusually large. In 2000, both the eastern and the western heartland have lower not working rates from the coasts, when we control for these characteristics. In 1980 and 1990, the regional differences look pretty small.

[Table 3]

Individual and area education have persistent and strong negative effects on not working. From 1980 to 2000, the not working rate was dramatically lower in right-to-work states. Corruption was positively associated with not working rate in 1990 and 2000. Occupational licensing has been positively associated with the not working rate in every year.

III. The Economic Rationales for Place-Based Policies

Standard locational externalities, including agglomeration economies and human capital externalities, imply that a decentralized spatial equilibrium may not be a Pareto optimum, but the large empirical literatures on such spatial spillovers provide little guidance about where these externalities are likely to be larger. Place-based policies can also insure against place-based shocks. Places may be useful tags for redistribution, which enable policy-makers to rely less on effort-distorting income-based redistribution. The largest weakness of equity and insurance both justifications for place-based policy is that relatively little income variation occurs across, rather than within, states. Focusing on small geographies improves targeting, but also increases the downsides of place-based redistribution: capitalization of the benefits into housing costs and distorted migration.

The best case for place-based policies exists when spending in some areas generates a much bigger behavioral response than in other areas. If the supply of workers into the labor force is more elastic in some areas than in others, devoting more federal resources to that area will do more to reduce the not working rate. When employment responses differ across space, welfare gains can be achieved, even without extra transfers to that area, by redirecting existing Federal transfers. For example, re-allocating Medicaid spending to employment subsidies may be welfare improving in areas with a higher employment response to the effective wage.

The Efficiency Rationale for Place-Based Redistribution

The existence of agglomeration economies and congestion externalities mean that local areas may have too many or too few people. To see this point, assume that there are only two regions in the economy, and assume that region 1 as the wealthier region.[24] A total homogenous national labor force (N_T) is divided into the population of the two locales (N_j for j=1, 2). Welfare in each region is a function of the population size (denoted $U_j(N_j)$).

A spatial equilibrium requires that utility levels are equalized between the two regions, so $U_1(N_1) = U_2(N_T - N_1)$. A social welfare planner who chose populations to maximize aggregated welfare $(N_1U_1(N_1) + N_2U_2(N_2))$ would set $U_1(N_1) = U_2(N_2) + N_2U'_2(N_2) - N_1U'_1(N_1)$. The extra terms $(N_2U'_2(N_2) - N_1U'_1(N_1))$ imply that the spatial equilibrium may not be a social optimum.

Yet the fact that the competitive equilibrium is not a social optimum does not justify targeted regional policies, since we don't know the direction of the problem. Most of the best agglomeration studies (e.g. Combes et. al., 2012) support the existence of agglomeration economies, but they give us little confidence about heterogeneity of local spillovers across space. The million-dollar plant identification strategy of Greenstone, Hornbeck and Moretti (2010) provides little hope of identifying heterogeneous agglomeration effects because great swaths of America, especially the high-income coastal regions, were generally not recipients of these plants. Consequently, it is impossible to know whether a relocation of capital and labor from Los Angeles to Kentucky will lead to benefits in Kentucky that are large enough to offset the losses in Los Angeles.

Perhaps there are settings where a Tennessee Valley Authority style "big push" may yield rich returns, but we are far from confident about economists' current ability to identify such opportunities. The general existence of agglomeration economies may support the case for national pro-investment policies, such as reducing taxes on capital gains, but unless we understand the spatial heterogeneity of agglomeration effects, the existence of agglomeration does not justify spatially heterogeneous polices.

The Insurance and Equity Rationale for Place-Based Redistribution

The simplest equity-based justification for place-based policies is that a concave social welfare function implies benefits from insuring against local shocks, or even redistributing from higher income areas to low-income areas. Redistribution based on local income differences is less

[24] We include a somewhat richer model in the online Appendix.

justifiable when higher income levels in some areas are offset by higher housing prices. A more straightforward argument for place-based redistribution is that it provides insurance against place-based shocks, without distorting labor supply or work effort.[25]

The strongest argument against place-based redistribution is that the correlation between place and income is relatively weak in the United States. In a regression where income is regressed on region dummies corresponding to our heartland definitions, those region dummies explain only 0.3 percent of the variation in income. When income is regressed on state dummies, those indicator variables explain only 1.2 percent of the variation. When income is regressed on Public Use Microdata Area (PUMA) dummies, those dummy variables explain 7.1 percent of the variation.

How big could the welfare gains be from spatial insurance across states and regions? To consider this question quantitatively, we assume that individuals just consume their income and that welfare is $\frac{y^{1-\gamma}}{1-\gamma}$ and we will focus on the case where $\gamma > 1$. If income is log-normally distributed, then expected welfare is equivalent to $E(Ln(y)) - (\gamma - 1)\mathrm{Var}(\ln(y))$.[26]

In our data, the mean of log of income for men is 10.53. The standard deviation of income within states is 1.11. The standard deviation of income across states is 0.12. Consequently, eliminating the variation of income across states is equivalent to increasing the log of income by $(\gamma - 1)$ times 0.12. If the coefficient of relative risk aversion (γ) is less than 3, this is equivalent to at best raising the average expected log earning by 0.24. If we treated income taxes as risk sharing, which reduced earnings by t and refunded t times mean earnings to everyone, then the benefit of spatial risk sharing would fall further.

The benefit of eliminating spatial income variation would represent a real welfare gain, but it would also distort migration and capitalization. The tighter the geographic targeting, the larger the share of inequality that can be eliminated. Tighter geographic targeting will also ramp up the impacts on migration and capitalization. Those distortions could be reduced if payments were based on place of birth, not place of current residence, but it is hard to imagine a birthplace based national policy. The economic case for place-based insurance is theoretically strong, but in practice, the possible impact of such a policy seems limited and likely to create pernicious side-effects.

[25]Albouy (2010) makes a related point by emphasizing how standard progressive income taxation, without an explicit spatial dimension, distorts spatial decisions. Income taxes induce people to choose amenities and low housing costs rather than high incomes, although the distortionary impact of the income tax is diminished by the home mortgage interest deduction.

[26] We can rewrite this as $\frac{1}{1-\gamma}e^{\ln(y^{1-\gamma})} = \frac{1}{1-\gamma}e^{-(\gamma-1)\ln(y)}$, and from this point, the standard CARA calculations follow to derive a linear mean-variance frontier. .

Differential Response Elasticities and Hot Spots Policing

We now turn to the third, and we think the best, rationale for spatial policy: market failures that can most plausibly be addressed at the local level. Police departments that use hot spots policing target resources towards areas where there is more crime, presumably because the impact of policing resources on crime is higher in those areas. The strategy seems be effective on both targeted areas and neighboring areas, suggesting that crime isn't merely displaced to different areas (Braga et al., 2014). We now turn to a model for place-based that captures the same economic logic that resources can reduce the not working rate more when targeted towards areas with higher not working rates.

We focus on public transfers to a population of less skilled workers, who are on the margin of working. We assume that America is divided in P regions, and marginal workers' wages equal w_p in region p. We assume that these workers never pay taxes, and that the social planner chooses lump-sum transfers conditional upon working (denoted e_p) and not working (denoted b_p). The monetized private benefit of not-working in place p equals d_p. Wages and other benefits are independent on the public transfers, and we ignore mobility and housing markets here.[27]

Individual i's welfare is $V(Earnings) - I_w c_i$, where I_w is an indicator function that takes on a value of one if the individual works, and c_i is an idiosyncratic cost of working, where the share of the population in place p, that has value of c_i less than $\hat{c}_i$ is denoted $F_p(\hat{c}_i)$. Individuals will therefore work if and only if $V(w_p + e_p) - V(d_p + b_p) \geq c_i$, and we denote $c_p^* = V(w_p + e_p) - V(d_p + b_p)$. The social welfare planner maximizes expected welfare across the population less the share of the population that is not working times a constant k, which captures any non-fiscal externalities from non-employment. The government's cost of funds equals ϑ, which can be interpreted as the Lagrange multiplier on the government's overall budget constraint. Within each area, b_p and s_p are chosen to maximize:

$$(1)\ F_p(c_p^*)\big(V(w_p + e_p) - \vartheta e_p\big) - \int_{c_i=c_{min}}^{c_p^*} c_i dF_p(c_i) + \Big(1 - F_p(c_p^*)\Big)\big(V(d_p + b_p) - \vartheta(b_p + k)\big)$$

For Proposition 1, we assume that V(.) is sufficiently concave to ensure that second order conditions hold.

[27] Some of these concerns are remedied in an online appendix.

Proposition 1: If V"(.) is sufficiently large in absolute value and $f'_p(c_p^*)$ is sufficiently small, then both benefit levels are decreasing in both w_p and d_p; an increase in k causes e_p to rise and b_p to fall.

This proposition contains the core insurance motive for redistributing across space. Areas with lower wages should optimally receive more not working benefits and more employment subsidy. The increase in employment subsidy reflects the fact that in poorer places, the marginal utility of consumption for the working poor is higher. The increase in the not working benefit reflects the complementarity between the two types of benefits, when the employment subsidy increases, it reduces the fiscal externality associated with non-employment and consequently reduces the cost of subsidizing not working.

The first order conditions can also create a variant of the Bailey (1976)- Chetty (2006) formula relating the marginal utility of consumption in for the employed and not working:

$$(2)\ \frac{V\prime(w_p+e_p)}{1-\epsilon_W^p\frac{(b_p+k-e_p)}{w_p}} = \vartheta = \frac{V\prime(d_p+b_p)}{1+\frac{f_p(c_p^*)V'(d_p+b_p)(b_p+k-e_p)}{1-F_p(c_p^*)\quad b_p}}$$

This can be rewritten as:

$$(2')\ \frac{V\prime(w_p+e_p)}{V\prime(d_p+b_p)} = 1 - \frac{\epsilon_W^p}{1-F_p(c_p^*)}\frac{b_p+k-e_p}{w_p}$$

where $\epsilon_W^p = \frac{f_p(c_p^*)V\prime(w_p+e_p)w_p}{F_p(c_p^*)}$, the elasticity of the employment rate with respect to the wage, and $\frac{(b_p+k-e_p)}{w_p}$, the size of the fiscal and non-fiscal externality associated with not working relative to the wage.

The expression $\frac{V'(w_p+e_p)}{1-\epsilon_W^p\frac{(b_p+k-e_p)}{w_p}} = \vartheta$ directly informs us about optimal heterogeneity in employment subsidies, whether or not there is heterogeneity in welfare benefits. The equation implies that in areas where the elasticity of employment with respect to the wage is higher, then the employment subsidy should be higher as well. Even if the current U.S. benefits system for the not working were kept entirely in place, it would be optimal to increase support for the marginally employed in places where the employment response to wages is higher.

The expression $\frac{V'(d_p+b_p)}{1+\frac{f_p(c_p^*)V'(d_p+b_p)b_p(b_p+k-e_p)}{1-F_p(c_p^*)\quad b_p}}$ is similar, as $\frac{f_p(c_p^*)V'(d_p+b_p)b_p}{1-F_p(c_p^*)}$ reflects the elasticity of the not working rate with respect to the benefit level. When this term is higher, then not working benefits should be lower. The not working rate elasticity is not identical to the employment elasticity so it is at least possible that the condition implies that some areas such have higher employment and higher non-employment subsidies.

The equation (2') relates the marginal utility of consumption for the two groups. If $\epsilon_W^U = 0$, then consumption is equalized between the not working and the employed. If $\frac{b_p+k-e_p}{w_p} = 0.2$, the not working rate equals 0.2, and $\epsilon_W^U = 0.25$, then $1 - \frac{\epsilon_W^p}{1-F_p(c_p^*)}\frac{(b_p+k-e_p)}{w_p} = 0.75$. If utility follows a constant relative risk aversion function of 0.5, then the optimal consumption of the not working is 0.56 times that of the employed. A lower elasticity of labor response of 0.1 will imply higher levels of redistribution to the not working, so that the not working consume only 19 percent less than the employed.

These calculations suggest that small differences across space may generate large differences in the appropriate balance between employment subsidy and non-employment benefits. In areas where the sensitivity of employment to wages is high, then subsidizing not working becomes particularly costly, when there are large externalities associated with non-employment. In areas that are close to full employment, then subsidizing the poor is less problematic. In the next two empirical sections, we discuss the evidence relating both to the size of the externality and to differential employment responses by place.

These calculations ignored capitalization and mobility effects, which would act against subsidizing non-employment in low wage areas. In the more general model in the Appendix, distorting mobility is costly and reducing the benefit from transferring extra resources to naturally high not working rate regions. Yet even when those concerns loom quite large, it is still possible to design welfare-enhancing place-based policies that reflect local heterogeneity. At the extreme, assume that the policy must not induce migration into the region or distort housing prices.

IF individuals chose migration into an area before their costs of working are revealed, then any policy that maintains the value of $F_p(c_p^*)V(w_p + e_p) - \int_{c_i=c_{min}}^{c_p^*} c_i dF_p(c_i) + \left(1 - F_p(c_p^*)\right)V(d_p + b_p)$ will neither distort migration nor influence housing prices. Consequently,

the social planner's problem can be written as to minimize $F_p(c_p^*)e_p + \left(1 - F_p(c_p^*)\right)(b_p + k)$ (the costs of transfers and externalities) subject to a fixed utility constraint.[28]

This problem is dual to the welfare maximization problem. It yields equation (2) and the same formula relating welfare for the employed and not working. Concerns about capitalization and migration influence the expected welfare for residents of this area, but not the optimal ratio of marginal utility levels for the employed and the not working. If the elasticity of the not working rate with respect to wages is higher in one place, then that place should do more to make work pay.

A final hot spots related justification for targeting is that the macroeconomic costs of supporting not working might be lower if we target West Virginia more than San Francisco. Phillips-curve type reasoning suggests that reductions in unemployment might increase pressure for wage-led inflation. This threat seems larger if San Francisco's not working rate is being pushed from five to two percent than if West Virginia's not working rate is being pushed from 13 to ten percent.

The Downsides of Spatial Policy: Capitalization, Mobility and Cost

As the previous discussion emphasized, two of the major downsides of place-based strategies are capitalization and distorted locational choice. If a place-based policy makes an area more attractive to a group, then that group will move into the area, or bid up prices, or both, depending on the elasticity of housing supply. The policy will impact prices more when the supply of space is inelastic. The policy will distort location more when the supply of space is elastic, but even when space is inelastic, there still can be a distortionary effect on the composition of the population.

A third major downside of spatial policy is cost, which in turn is a function of the targeting of the policy. In all three discussions, we assumed that subsidies and taxes are not well targeted within the region. A general employment subsidy has these features, as would policies that increase general labor demand in the poor region through the use of tax credits or direct government spending. Yet it is possible to imagine policies that were more directly targeted towards marginal workers. Those policies would reduce the taxes needed to encourage

[28] We are implicitly assuming that "k" represents a national rather than a local externality. Results are not significantly changed if k is treated as a local cost born by potential migrants. The utility constraint is $F_p(c_p^*)V(w_p + e_p) - \int_{c_i=c_{min}}^{c_p^*} c_i dF_p(c_i) + \left(1 - F_p(c_p^*)\right)V(d_p + b_p) = \underline{U}$

employment and would also dampen capitalization and migration effects, since they impact a smaller share of the population.

The three motives for place-based strategies have different implications for the costs of capitalization and distorted mobility. If the point of spatial targeting is to achieve agglomeration-related benefits, then distorted locational choice is not a problem but a desired outcome. The point of the policy is to induce economic activity to relocate. Capitalization might be a slight negative, in that the property owners will reap much of the benefits, but that would not particularly undo the efficiency gains from relocation.

If the purpose of spatial targeting is to redistribute towards poorer residents, then relocation is not intrinsically desirable. Yet if we cannot sign the impact of relocating people and firms on aggregate efficiency, then we also cannot be sure whether inadvertent relocation generates welfare losses or benefits. A prominent exception to this claim is that there may be considerable downsides from concentrating poverty and non-employment, partially because this may cause welfare losses to the poor that undo any benefits that come from targeting resources towards a particular area.

Capitalization, by contrast, will tend to work against the redistributive benefits of targeting resources towards poorer areas. If the primary beneficiaries of these benefits are the property owners, then the policy may be progressive across places but regressive within places. Once again, targeting can reduce the capitalization-related downsides of any policy.

If the goal is targeting resources against a demonstrable social problem, like non-employment, then again efficiency not equity is the larger objective. In that case, the redistribution to owners due to capitalization is not particularly problematic, nor are the distorted locational choices. Even more broadly, the policy can be a place-based benefit shift, which fights non-employment without inducing in-migration. We now discuss the two parameters that are needed to use equation (2), our modified Bailey (1976)—Chetty (2006) formula.

IV. Do Employment Elasticities Differ Across Place?

The theoretical case for the spatial targeting of employment subsidies depends on whether such policies have a greater marginal impact on employment in some areas. Employment subsidies could have a larger impact in distressed areas, but the opposite is also possible. High not working rate areas might have social problems that lead even fewer people to be on the margin

of working. High not working rate areas might have extremely inelastic labor demand, so that few new jobs will created because of a subsidy. The case for infrastructure, relative to subsidies, is stronger when private labor demand is inelastic. It is an empirical question as to whether interventions in high poverty areas are more likely to increase the level of employment.[29]

We have three ways of testing for differential employment elasticities. First, and most obviously, we look at the impact of labor demand shocks on the not working rate and test for heterogeneity across space. Second, we review the surprisingly limited literature on heterogeneous spatial impacts of social programs on the not working rate. Third, we revisit the Nakamura and Steinsson (2014) evidence linking government spending to GDP growth and test for heterogeneous treatment effects on the not working rate.

The Heterogeneous Impact of Labor Demand Shocks

We first look at the impact of labor demand shocks on the not working rate. Our basic instrument for labor demand is the Bartik (1991) instrument interacting initial industry shares with changes in the national employment in the industry outside of the PUMA or state, or:

$$Bartik\ Shock = \sum_{Industries} \frac{emp_{ist}}{emp_{st}} \frac{emp_{i,t+1}^{US\ not\ s} - emp_{i,t}^{US\ not\ s}}{emp_{i,t}^{US\ not\ s}}$$

where emp_{ist} is employment in industry i, location s and time t, emp_{st} is total employment in location s at time t, and $emp_{i,t}^{US\ not\ s}$ is the employment in industry i at time t in the United States outside of location s. Thus, this shock represents the percent growth in employment in the location that would have been predicted if the location's industries saw their employment grow at the national average.

We look at Bartik effects both at the PUMA and the state level. We begin with state-level estimates over the 1977-2016 period. Our first two regressions in Table 4 shows the negative impact of the Bartik shock over the entire time period, as expected, and that this impact is larger in states with higher initial not working rates. The third and fourth regressions show that this interaction term is robust to the addition of year fixed effects. It does seem as if demand shocks are more strongly associated with changes in the not working rate in places with a higher average not working rates.

[29] Our discussion of this question builds on the work of Bartik (2015), who finds some evidence that local demand shocks have a greater impact in areas with higher initial unemployment rates. A large number of previous studies have also examined the persistence of local labor demand shocks, with varying conclusions.

Regressions (5)-(6) show results for housing prices. The state-level housing price index is a repeat sales index prepared by the Federal Housing Finance Agency (FHFA). Regression (5) find that positive Bartik shocks are associated with more housing price growth, suggesting that economic success is associated with higher housing costs. Regression (6) shows a strong negative interaction between the not working rate and the Bartik instrument. The Bartik shock has a statistically significant impact on the not working rates in high not working rate states relative to other states, but this interaction is not statistically significant for house prices.

[Table 4]

In the next table, we look at results at the sub-state level using Public Use Microdata Areas (PUMAs), using annual changes since 2005 because of limited data availability prior to that time period. [30] In Table 5, we control for the not working rate in 2005 and interact that rate with subsequent Bartik shocks. We also control for state and year fixed effects and the education level of PUMA in 2005. The first regression shows that the Bartik instrument has a strong negative impact on the not working rate over this period. The second regression shows that this effect is far more strongly concentrated in places that had high levels of the not working rate in 2005. A ten percentage point change in the not working rate increases the impact of the Bartik shock by almost 50 percent relative to a zero not working rate benchmark.

Regressions (3) and (4) look at real income growth for all prime-aged men. In this case, we find that the Bartik instrument does significantly predict real income growth. Moreover, regression (4) shows that the impact is larger in high not working rate areas.

[Table 5]

Finally, we examine the impact of trade shocks on prime male employment, using shocks identified by Autor, Dorn, and Hanson (2013). They use the change in Chinese import exposure per worker in a region as their main measure of local labor market exposure to import competition. To address potential endogeneity issues, they instrument growth in United States imports with growth in Chinese imports in eight other developed economies. In Table 6 we follow the approach in their paper and regress the share of not working men or long-term not working men on the change in Chinese imports per worker.

[30] We find broadly similar results using Commuting Zones rather than PUMAs. We prefer to use PUMAs as these areas are directly identifiable in the microdata available.

[Table 6]

In regression (1) we examine the effect of a shock in Chinese imports on prime male not working rates. As expected, increases in Chinese import exposure are associated with an increase in the level of prime male non-employment, and the coefficients are statistically significant. Regression (2) examines the heterogeneity of responsiveness based on initial not working rates in 1990. We find that Commuting Zones with the highest levels of initial not working rates, defined as being in the top 10 percent, experience a higher level of non-employment in response to changes in Chinese import exposure. Regressions (3) and (4) report the same results for long-term not working rates, and we find a similar pattern, albeit with smaller absolute increases.

These results may be relatively unsurprising. A shock to local labor demand has more impact on the not working rate in places where non-employment is high than in places that are already near full employment. Yet this heterogeneity is crucial in justifying spatially heterogeneous policies that encourage employment more in some areas than in others.

Heterogeneous Responses to Past Social Programs

There is surprisingly limited work testing whether national changes in policy have heterogeneous treatment effects across space. For example, a long literature (Meyer and Rosenbaum, 2001, Eissa and Liebman, 1996) has examined the impact of the Earned Income Tax Credit on employment. We have found none of these studies that ask whether the impact of the credit was higher in places that had initially higher levels of non-employment. Neumark and Wascher (2011) find interactions between the EITC and the state minimum wage, but the imperfect relationship between the minimum wage and non-employment makes these hard to interpret.

There is abundant evidence suggesting that targeted social programs can have a large impact on the not working rate. For example, Miller et al. (2017) test an EITC like product that is targeted towards people without children called paycheck plus. The treatment effect of the product on employment outcomes, especially filing taxes, is higher for people who initially earned less than $10,000 per year. We hope that future research will test more regularly for whether social interventions have more impact in some states than in others.

Spatial Heterogeneity in Nakamura and Steinsson (2014)

In this section, we use the shocks to federal spending that are identified by Nakamura and Steinsson (2014).[31] We focus on state male not working rates as our outcome of interest and we test for interactions between these shocks and the average not working rates within the state. Their approach is to regress the percentage change in the employment rate within the state on the change in military spending over the same period. They instrument for the change in military spending with the interaction between initial spending on the military in the state and changes in national military spending.

The key identification assumptions needed for this approach is that the initial military spending within the state is orthogonal to subsequent economic changes in the area, and that national military spending has no correlation with local shocks that is not mediated by military spending itself. Those assumptions would be violated if national military spending was correlated with other shocks to industrial demand or if local military spending predicted other changes in the local economy.

Our specification is to follow Nakamura and Steinsson (2014) and regress:

$$(3)\ \frac{Not\ Working_{t+j} - Not\ Working_t}{Not\ Working_t} = \beta \cdot \frac{Speding_{t+j} - Spending_t}{Spending_t} + Time\ and\ Year\ Fixed\ Effects,$$

where $Not\ Working_t$ refers to the not working rate in the state, and $Spending_t$ refers to per capita military spending. We instrument for the spending variable using the percentage growth in national military spending interacted with a state dummy. This specification follows the structure of the employment rate regressions in the original paper.

We do this for one, two and three year changes. Our primary focus is on the interaction between military spending and the average not working rate in the state. We implement this by generating an interaction between the spending variable and an indicator variable that takes on a value of one if the state is in among the 25 percent of states with the highest not working rate over the entire time period. This is conceptually a different experiment that the Nakamura and Steinsson (2014) interaction between military spending and whether the state has a high not working rate figure relative to its historic norm.

[Table 7]

[31] A number of other studies have examined the heterogeneous impact of government expenditure at the local level. For example, see Dube, Kaplan, and Zipperer (2015). A general review of local multipliers is provided by Chodorow-Reich (2017)

We show the one year change results in regressions (1) and (2). Regression (1) confirms that the basic result holds for the not working rate. A one percent increase in military spending is associated with a six percent decrease in the not working rate, although the coefficient is not statistically significant. Regression (2) shows that the coefficient on military spending significantly larger in high not working rate areas and is statistically significant different from low not working rate areas.

In regressions (3) and (4), we look at two year changes, which is the preferred specification of Nakamura and Steinsson (2014) themselves. The overall effect on the not working rate itself is significant at the 10 percent level. A one percent increase in military spending is associated with a 6.3 percent decrease in the not working rate. The interaction with high not working rate is small and insignificant.

In regressions (5) and (6), we look at the three year change in the not working rate. In this case, a one percent increase in military spending is associated with a 9.6 percent decrease in the not working rate and is statistically significant at the five percent level. The interaction is negative and economically meaningful in size, but so imprecise that we can draw little confidence from this result. Overall, these results, especially for the one-year changes, suggest that military spending might be more effect in high not working rate areas, but they are no more than suggestive.

V. The Externalities of Not Working

If not working generates no externalities, then there is no reason for the government to deter not working in our model. In this section, we discuss the three types of externalities associated with non-employment: pure fiscal losses from reduced taxes and increased social spending; social spillovers born by family and friends; and not working spillovers where one individual not working increases the chance that other workers don't work. We do not consider externalities that could work through congestion of the employment matching process, primarily because we consider congestion to be a short run phenomenon, while we are primarily in the long run costs of concentrated non-employment.

Fiscal Externalities: Taxes and Spending

The most obvious externality associated with non-employment is the cost born by other taxpayers due to a reduction in tax revenue and increase in public expenditures. We first focus

on the income of not working prime-aged men, to understand the amount of public resources they are receiving. Data is averaged over the 2010-2015 period and based on the Annual Social and Economic Supplement to the Current Population Survey.

Table 8 shows income sources for four groups: all employed prime-aged men, the low income employed which are defined as having family annual earnings below $40,000, men who are not working and have been not working for less than twelve months, and men who have been not working for more than 12 months.

[Table 8]

The missing earnings of the not working are supplemented mainly by disability payments and by the other residents of their own home. The added public expenditure going to the short term not working relative to low income workers is $2350; the average added expenditure going to the long-term not working is $6300. Average over the entire not working population, the increase is $4900, which is 26 percent of low income individual wages in this sample

In Table 9, we break out the earnings of the long-term not working by region.

[Table 9]

The results are quite similar. The family incomes in the heartland areas are lower than in the coastal states. Disability payments are higher in the eastern heartland than in the other regions. Nowhere are family transfers are large share of total earnings.

The map shows the income of the long-term not working throughout America.

[Figure 25]

The men in New England and the northern portion of the western heartland have higher levels of personal income. The men in Nevada, Mississippi and portions of the Deep South have particularly low levels of personal income.

As disability is such an important part of public support for not working men, we now focus on the geography and time series of disability in the U.S. The next map shows disability rates across the U.S.

[Figure 26]

We see the familiar pattern of suffering in the eastern heartland, but higher rates of being on disability certainly don't seem to generate higher earnings for the not working.

The next graph shows that the share of the long-term not working receiving disability insurance or SSI has remained roughly steady at 40 percent over the past 40 years. This fact reminds us that while disability is the largest source of income for the long-term not working, many of the long-term not working don't actually receive disability insurance.[32]

[Figure 27]

The next time series confirms that disability status is higher for the long run not working in the eastern heartland. In the coastal states and the western heartland, less than 35 percent of the long-run not working received disability. The figure is almost 45 percent in the eastern heartland.

[Figure 28]

But should disability be seen as a transfer to the not working that would stop if employment increased, or a social insurance program that compensates the unlucky who receive negative health shocks and couldn't work in any case? Many of the not working report regular and severe health problems. The next figure shows that over 30 percent of the not working in all three regions report ten or more days of severe health problems over the past month.

[Figure 29]

The next figure shows that over 40 percent of the not working in all three regions report that they faced severe limitations ten or more days over the past month. Again, there is certainly a correlation between not working and health, but it is certainly possible that the misery of not working is partially responsible for some of these physical limitations.

[Figure 30]

Autor and Duggan (2003) depict disability as a substitute for unemployment insurance that may be better seen as a social cost of non-employment, rather than an independent insurance program. Kostol and Mogstad (2014) show that when disabled people are able to keep more of

[32] If we measure disability receipt using the Survey of Income and Program Participation, the fraction of not working men receiving disability benefits is higher than in the ASEC data. See Eberstadt (2016) for tabulations.

their earnings in Norway, they work and earn more. Maestas, Mullen and Strand (2013) show that subsequent employment would have been 28 percentage points higher amongst successful applicants for Social Security Disability Insurance who were on the borderline of receipt, and French and Song (2014) find a similar result amongst applicants who successfully appeal their applications. These papers suggest that at least part of the disability cost should be seen as a fiscal externality generated by non-employment.

In Table 10, we turn to expenditures using data from the Consumer Expenditure Survey. We split the population into employed, employed living alone, low income employed (again earning less than $40,000 per annum) and long-term not working living alone.

[Table 10]

The not working, unsurprisingly, pay far fewer taxes than employed men generally, who pay over $15,000 annually, or employed men living alone, who pay almost $10,000. However, if the comparison is with low-income men living alone the gulf in taxes is much smaller. The not working men living alone contribute 608 dollars in taxes, as opposed to $1800 in taxes for the low-income employed.

If the relevant margin is between non-employment and average earnings, then tax related fiscal externality is over $9,000. If the relevant margin is between non-employment and low-income wage labor, then the tax-related fiscal externality is much smaller, closer to $1200.

Perhaps, the most surprising fact is that the expenditures of the not working are much higher than their income level and not that much lower than the expenditures of the low-income employed, who spend $27,200 annually. The not working who live alone spend $20,500. The plausible explanations for the gap between expenditures and earnings in this group including running down savings, borrowing, unreported family transfers and perhaps even illicit earnings. Typically, this group has neither significant assets nor great credit, which makes it hard to believe that past savings and borrowing can explain the gap. They report low levels of family transfers.

The small gap in spending between low income employed and not working suggests that Keynesian externalities associated with moving the not working into low wage jobs is small. The largest spending increase associated with employment is transportation, which may reflect the costs of getting to and from work. The employed also spend 300 dollars more on alcohol annually, $1300 more on housing and $1200 more on food. The greater food expenditure may reflect some eating out on the job.

Does this data suggest a large fiscal externality from non-employment? Benefits fall by $4900 and taxes fall by $1200, when we compare the not working with low wage workers. If one-half of the disability payments would have been paid in any case, then the benefit gap drops to $3200, making the total fiscal externality $4400, which is 23% of the earnings of the low income individuals.

Social Externalities born by Families and Friends

We now turn to the costs of non-employment that are born by family and friends. A large share of the long-term not working do not live alone, but many of these men are not married. Figure 31 shows the time series of the share of men who have ever married, for the employed, the short term not working and the long term not working. The three lines show parallel upward trends, with the not working always being less likely to have married than the employed. By 2015, one-half of the long-run not working have never married, and over 40 percent of the short-term not working have never married. Less than 30 percent of the employed have never married.

[Figure 31]

The share of the employed that is separated or divorced has risen over time. The separated or divorced share of the not working has remained steady at about 20 percent. Consequently, only 30 percent of the long-term not working have current spouses, and the majority of their co-habitants are not their current spouses.

[Figure 32]

In many cases, the not working are actually living with their parents. The next figure shows the trend in cohabitating with parents by employment status. This figure has always been high for the long-run not working, but it has risen in recent years to over thirty percent. The long-run not working are split relatively evenly between living with a spouse, a parent or some alternative.

[Figure 33]

Family-based support is quite different for the not working who live alone, and we separate those in Table 11. For the not working who live with other people, their consumption seems primarily to be based on the earnings of those who live with them.

[Table 11]

Does non-working also impose externalities on family and friends who subsidize the not working? If nuclear families are unitary decision-makers, then they are presumably making a joint decision about work and leisure. If men make independent decisions about work, and then spouses bargain ex post about the share of rents, then spouses will presumably lose their share of the foregone earnings.

Some of those externalities will be offset if the not working spouse participates more in household production, but time use surveys suggest that this is not the case. Table 12 shows the time use of employed and not working men by region.

[Table 12]

Working men spent almost exactly 530 minutes per day in personal care, ninety five percent of which is typically sleep. They work an average between 382 and 401 minutes per day, which corresponds roughly with a 6.5 hour workday, averaged over the course of the week. Notably, the men in the western heartland do seem to put in longer hours. They offset this time by spending slightly less time in leisure activities. Television remains the dominant use of leisure time and takes up slightly over two hours per day for working men.

Not working men work about six hours less per day. This extra time is spent primarily in leisure activities. The not working in the eastern heartland spend over five hours daily watching television. There is also an uptick in computer gaming, as noted by Aguiar, Bils, and Hurst (2017).

The not working men of the coasts and the western heartland increase their time spent on these household production tasks by 56 and 59 minutes respectively. The modal categories for male household activities are food preparation and lawn work. Consequently, even for this group, less than one-sixth of the time freed up by non-working goes to activities that benefit the household rather than private consumption. By contrast, not working men in the eastern heartland spend only 30 more minutes on household activities than working men and nine more minutes caring for others.

The view that spouses are not benefiting from their partners' non-employment is further supported by the correlation between not working and divorce rates. It is not merely that the not working are more likely to be divorced. Losing one's jobs is associated with a higher risk of becoming divorced (Killewald, 2016). While this fact has many interpretations, one view is that male non-employment is a negative shock to their spouse.

We will take the stand that bargaining is efficient between spouses, but not between parents and children. Consequently, for the approximately 25 percent of the not working population that lives with their parents, non-housing expenditures represents an externality from non-employment. The long-term not working who live alone have total non-housing expenditures of 11,291. Consequently, not working generates an average family externality of $2822, which is 15 percent of low-wage income. This figure is a crude attempt to capture intra-family losses, "internalities," and the more general spillovers from not working that we discuss next, collective this brings the total externality to $7222, which is 38 percent of low wage earnings.

Non-employment Spillovers

The suffering of not working will be magnified if not working spills over across individuals. This spillover could occur because an individual's not working leads to less demand for local products, which reduces local labor demand. Non-employment could also spill over if it reduces the stigma of not working (as in Lindbeck et al., 1999), creates a culture of not working or if the not working enjoy being with each other.[33]

Topa (2001) presents the now-standard model of this phenomenon. He estimates this model using tract level data from Chicago using a structural model. The sorting of the unemployed within the city provides evidence that support the view that the unemployment of one person is a complement to the unemployment of his neighbor. Conley and Topa (2002) extend this analysis to a larger geographic area.

Clark (2003) provides evidence for the social norm hypothesis. He finds evidence that the self-reported life satisfaction of unemployed is much higher if there is more unemployment in the individual's reference group. He also finds that individual's whose unhappiness drops more at the point of unemployment are more likely to find future employment. These findings seem to suggest that a norm of not working translates into still more long-term non-employment. A final piece of evidence supporting the non-employment spillover hypothesis is that aggregate employment relationships with variables like tax rates are often much stronger than individual employment relationships (Alesina, Glaeser and Sacerdote, 2005), which suggests the existence of a social multiplier.

Calibrating the Level of Place-Based Interventions

[33] The welfare effects of such spillovers would be ambiguous. The not working benefit from having more not working friends, even if others pay the costs of a generally higher not working rate.

We now use the modified Bailey (1976)—Chetty (2006) formula discussed in Section III, and attempt to obtain quantitative estimates of the optimal degree of place-based heterogeneity. We consider two thought experiments. First, we assume that existing benefits continue in place, and we estimate the optimal allocations of new employment subsidy across space. The relevant first order condition for such an employment subsidy bonus is that $\frac{V\prime(w_p+e_p)}{1-\epsilon_W^p\frac{(b_p+k-e_p)}{w_p}}$ must be constant over space. Second, we assume that funds are removed from current benefits received by the not working and allocated to marginal workers. In that case the relevant first order condition is $\frac{V\prime(w_p+e_p)}{V\prime(d_p+b_p)}=1-\frac{\epsilon_W^p}{1-F_p(c_p^*)}\frac{(b_p+k-e_p)}{w_p}$. Our model does not incorporate wage effects of subsidies, or migration and capitalization, which could be significant by-products of the first thought experiment, but not the second. Consequently, these calculations are illustrative at best.

In both cases, we depend on place-specific estimates of the extensive margin elasticity of labor supply. Our purpose here is to emphasize the heterogeneity across America, not to advance the considerable literature on labor supply.[34] We use a simple empirical approach regressing log wages for the 25th percentile of employed men on the log employment rate at the PUMA level. We instrument for wages using Bartik shocks as described above. Table 13 summarizes the results. The coefficient on log wages is small and insignificant, but the interaction of wages and the 1980 not working rate is large and significant.

[Table 13]

The measured elasticity varies over space, with greater responsiveness in high not working rate areas. Wyoming had the lowest not working rate in 1980 of 6.5 percent, and the implied elasticity is 0.078. West Virginia had the highest not working rate in 1980 of 16.5 percent, and the implied elasticity is 0.253.[35] We hope that this simple approach will be superseded in future work that will bring more sophisticated estimation techniques to assess the heterogeneity in labor supply elasticities across space.

We assume a constant relative risk aversion utility function, with a coefficient of relative risk aversion of γ. Andersen et. al. (2008) estimate that coefficient is 0.741 in laboratory experiments

[34]. For example, Juhn, Murphy and Topel (1991) find the partial elasticity varies depending on the income distribution of men, with an average value of 0.13 and a high value of 0.35 for men in the 10th percentile of income. Meghir and Phillips (2010) similarly find a higher elasticity of 0.4 for low-income men in the UK. Broader reviews include Blundell and MaCurdy (1999) and Chetty et. al. (2013).

[35] Given the inadequacies of this approach, we separately estimate regressions for the PUMAs with in the 10th and 90th percentile of not working rate in 1980. This approach again yields differential elasticities across space, with an elasticity of approximately zero in the low not working rate areas and 0.458 in the highest. We can reject at the 5 percent level that the elasticity in high not working rate areas is zero, but can not reject that these estimates are different from the estimates using interaction.

with relatively low stakes. Cohen and Einav (2007) estimate a median coefficient of relative risk aversion of 0.37 from deductible choices in auto insurance. Barsky et. al. (1997) find evidence for higher values using larger gambles. Some macroeconomic estimates associated with explaining the equity premium puzzle are higher still. We report values assuming coefficients of 0.5, 1.0, and 2.0.

We start with the employment subsidy formula: $\frac{V\prime(w_p+e_p)}{1-\epsilon_W^p\frac{(b_p+k-e_p)}{w_p}}=\vartheta$, and we implement it by one region (A) and with a benchmark region 0, where $\epsilon_W^0=0$, and $e_0=0$. Essentially, we are asking how much larger a region's employment subsidy should be than a place where there is no employment response to wages and consequently no employment subsidy. We assume that the marginal worker's wage is everywhere fixed at w_0 and independent of the employment subsidy, perhaps because the wage is determined by the federal minimum wage. We also assume that $\frac{(b_A+k)}{w_A}=.382$, as discussed above. With those assumptions, $\frac{V\prime(w_0+e_A)}{V\prime(w_0)}=1-.382\epsilon_W^A+\frac{e_A}{w_0}\epsilon_W^A$.[36]

Figure 34 then illustrates the optimal employment subsidy relative to the wage ($\frac{e_A}{w_0}$) as a function of ϵ_W^p for the three different cases of Constant Relative Risk Aversion (CRRA) utility.

[Figure 34]

The graph can then be matched with our estimates of differential employment elasticity. For example, low not working rate states such as Wyoming have an estimated elasticity close to zero, suggesting a minimal optimal employment subsidy. High not working rate areas such as West Virginia, with an estimated elasticity of .253, has an optimal subsidy equal to 15 percent of wages, if the coefficient of relative risk aversion equals 2, an optimal subsidy of close to 10 percent of wages if the coefficient is 1, and less than five percent of wages is the coefficient is 2. High coefficients meant strong concavity that reduces the benefits of the employment subsidy.

The previous thought experiment was a bonus that just allocated employment dollars to high not working rate states. Our alternative thought experiment is a twist that reallocates $x*w_p$ dollars from not working benefits and adding $\frac{1-F_p(c_p^*)}{F_p(c_p^*)}*x*w_p$ to the employment subsidy. We assume that $e_p=0$ without this subsidy. We assume that $d_p+b_p=.6*w_p$, which is in line

[36] We make the simplifying assumption that the labor elasticity in the region is constant as we change the employment subsidy. We recognize this is not accurate, and a more complete calibration would involve imputing the reservation wages for not working men in each region.

with Table 8 and Table 10. In this case, the modified Bailey (1976)—Chetty (2006) condition in our equation (2) implies: $.6 - x = \left(1 + \frac{1-F_p(c_p^*)}{F_p(c_p^*)}x\right)\left(1 - \frac{\epsilon_W^p}{1-F_p(c_p^*)} * .382 + \frac{\epsilon_W^p}{F_p(c_p^*)}x\right)^{\frac{1}{\gamma}}$.

Figure 35 then illustrates the optimal employment subsidy twist as a function of ϵ_W^p for the three different cases of CRRA utility.

[Figure 35]

Again we can match the theoretical predictions against different states. In states with low elasticities, we find the optimal size of employment subsidy is negative, so that the optimal change to the benefit scheme would be to increase benefits for the not working by increasing taxes.[37] Indeed, if the coefficient of relative risk aversion is 2, then the model almost always pushes towards more transfers for the not working because of such strong concavity. When the coefficient of risk aversion is .5, again the model suggests an employment subsidy of 20 percent or more in states like West Virginia depending on the elasticity.

Finally, we can calculate the predicted optimal ratio of consumption when working or not working in different states, based on their employment and not working share. Our ratio of the fiscal and other externalities of not working to the wage is .382 from the previous section. The not working rate is somewhat more complicated, as this is the share of the low skill, at-risk workers who are not working, not the not working share of the entire population. We use our previous definition of low-income men as men who are employed and have a total family income of less than $40,000 per annum. Using this definition, we find the not working rate for at-risk workers varies from 39.5% in Wyoming to 61.0% in West Virginia using 2014-2016 average ASEC responses.

Table 14 summarizes our results. We find that our model predicts that the ratio of consumption of not working to employed men should indeed be lower in high not working rate areas. While these values are only tentative, they illustrate the importance of considering spatially heterogeneous policy responses to non-employment.

TABLE 14— ESTIMATES OF OPTIMAL CONSUMPTION RATIO OF NOT WORKING TO EMPLOYED INDIVIDUALS

	Wyoming	Massachusetts	West Virginia

[37] In a broader model, the funds could come from other sources than just taxes on low income earners.

At-risk Not Working Rate (2014-2016)	39.5	48.5	61.0
Elasticity of the employment rate	0.08	0.14	0.25
Externality as percent of wage	38.2	38.2	38.2
Ratio of consumption			
$\gamma = 0.5$	85.6%	79.4%	70.8%
$\gamma = 1.0$	92.5%	89.1%	84.2%
$\gamma = 2.0$	96.2%	94.4%	91.7%

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

We view these results as thought experiments, not serious policy proposals. These calculations suggest that if utility functions are not too concave, then significantly stronger subsidies for employment would be optimal for states like West Virginia. That conclusion would be tempered if wages fell with subsidies, or if the subsidies distorted migration. If migration was a paramount concern, then our model suggested that there could even be welfare gains in high not working rate areas by replacing benefits for the not working with benefits that subsidized marginal workers. In low not working rate areas, more benefits for the not working were welfare-enhancing, especially when risk aversion was high.

VI. Place-Based Policies: Efficacy, Capitalization and Mobility

We now turn to a brief taxonomy of place-based policies in the U.S. and elsewhere. Our goal is to link these policies with the three objectives discussed before, and to discuss the evidence on their downsides, including capitalization, distorted location choice and overall cost. We do not focus on the spatial heterogeneity that occurs because of differences in local government actions, but rather ways in which national governments and the European Union generate policies with spatially heterogeneous effects. A central theme of this section is that spatial policies have the largest impact when they are targeted towards the needs and problems of particular regions.

A Taxonomy

Spatial policies can be explicit, openly targeting one area or another, or implicit, aiding particular areas disproportionately, but without an acknowledgement of the geographic tilt. Spatial policies can take the form of direct public investment, tax benefits or subsidies to businesses, tax benefits or grants to individuals, and regulatory relief. The following table provides a brief summary of the eight categories in our taxonomy, with a few examples of each form.

Table 15: Taxonomy of place based policies		
	Explicitly Spatial	Implicitly Spatial
Direct Public Investment	Tennessee Valley Authority Appalachian Regional Commission	Federal Highway System Relocation of Public Offices
Tax Benefits/Grants for Businesses	New Markets Tax Credit Mezzogiorno Tax Credit	Agricultural Subsidies Oil Depletion Allowance
Tax Benefits/Grants for Individuals	North Norway Benefits Customized Training Programs	Flood Insurance Nominal tax credits State/local tax deductibility
Regulatory Relief	Special Economic Zones (China) Devens Enterprise Commission	Channel Islands Heterogeneous Environmental Regulations

Direct Public Investment

The Tennessee Valley Authority (TVA), for example, was a New Deal innovation, meant to deliver electricity and improve conditions in one of the poorest parts of the country. The TVA began not with a desire for a spatial big push, but with the recognition that electricity could have high returns and could be produced by the region's abundant hydropower. Kline and Moretti (2013) provide evidence showing that the TVA increased agricultural employment in the region while subsidies were in place and manufacturing employment even after the subsidies ended. They interpret their findings as suggesting that the TVA generated durable agglomeration economies. An alternative interpretation is the TVA was successful because it delivered electricity, which had a particularly high return in the Tennessee Valley.

Kline and Moretti (2013) also provide evidence relevant for both capitalization and mobility. None of their specifications show a positive impact of the TVA on population growth within the region, suggesting there were minimal distortions of location choice, which perhaps reflect the

fact that the TVA was supposed to pay for itself eventually. In some, but not all of their specification, there is a positive impact on median housing value. Yet those positive effects do not withstand the inclusion of other controls.

The second particularly well-known spatial program in the U.S. was the Appalachian Regional Commission (ARC), which became a Federal agency in 1965. The Commission's was motivated by local poverty, not any obvious economic opportunity and its geographic scope runs through 13 states, and includes all of West Virginia. The Commission provides grants in many areas, but its signature project is the Appalachian Development Highway System, which provides highway access throughout the region. Economic conditions in the impacted counties do seem to have improved during the 1970s, but there is little evidence of any more durable economic transformation (Glaeser and Gottlieb, 2008). The program's scale was modest, relative to the size of the region, which makes ex post evaluation difficult. Nonetheless, the ARC's limited success surely reflects its failure to find a high return regional intervention.

The European Union's Cohesion policy is a much larger example of spatially targeted public investment. The Cohesion policy's explicit goal is to reduce income disparities within the Union, partially to reduce the political tensions that can come with heterogeneity. The policy differentiates at the sub-national level, so while Warsaw is considered to be more developed, the rest of Poland is less developed. Boldrin and Canova (2001) and Dall'Erba and LeGallo (2007) both conclude that this policy is ineffective. Cappelen et al. (2003) find modest positive effects, which are larger in more developed countries. Again, the policies seem to have limited effect because they focus on spreading money around rather than on interventions that have high returns in particular places.

Within the U.S. and elsewhere, spatially motivated infrastructure investment has been much less important to spatial development than non-spatially motivated infrastructure investment. The Federal Highway System, for example, was not intended to help suburbanize America or to strengthen particularly communities relative to others. Yet Baum-Snow (2007) finds that each new highway that was built in a metropolitan area with Federal support after World War II reduced the central city's population by 18 percent. Duranton and Turner (2012) find significant effects of highway construction on the economic development of connected metropolitan areas. The large mobility effects of the highway system reflect the fact that the system delivered mobility that was valued by millions of Americans.[38]

[38] A host of studies also find impacts of highways on local property values (e.g. Chernobai, Reibel and Carney, 2011). A working paper version of Duranton and Turner (2012) found that more highway miles were associated with slight decreases in the number of poor people and the number of high school dropouts, suggesting that if anything the sorting effects of infrastructure are slightly positive.

While Aschauer (1989), Munnell (1992) and others have found positive effects of infrastructure on local economic activity, Garin (2017) finds almost no impact of American Recovery and Reinvestment Act (ARRA) transportation spending on employment. One interpretation of the difference is that the earlier studies focused on a period in which infrastructure brought high value to drivers and consequently also moved activity across space. Gramlich (1994) is particularly associated with the view that the returns to infrastructure have declined over time. The modest impact of recent subways on urban structure (Baum-Snow and Kahn, 2005) is compatible with the view that investments that are poorly targeted towards local demand also have little spatial impact.

Supporters of spatial targeting for direct government spending sometimes argue that in some cases, spatial effects can be generated at moderate cost. For example, if the government is going to spend a fixed amount on the military, then locating an installation in Mississippi rather than New York may be largely irrelevant to any military objectives. Nakamura and Steinsson (2014) find significant effects of military spending on the local economy. Faggio and Overman (2014), however, use quasi-exogenous shifts in the size of local government to estimate the spillovers from increases in public employment. They find that one extra job in the public sector generates .5 extra service sector jobs and crowds out .4 tradable sector jobs.[39] One explanation for the difference may be that non-military employment crowds out local jobs, but military employment is sufficiently different so that it does not.

The land grant colleges may have been the Federal governments most successful forays in place-making.[40] These educational institutions, subsidized with Federal land, are strongly associated with high incomes (Moretti, 2003) and population growth during recent decades Glaeser and Saiz, 2004). Once again, these interventions seem to have been spatially effective because they supported an activity that was thought to have high returns regardless of any spatial dimension.

Local Employment Subsidies

The case for spatial targeting is that supporting employment may have a particularly high return in particular places. There is a serious literature documents the effects of national employment subsidies. Gruber (1997) finds that the elimination of the payroll tax in Chile was

[39] Ades and Glaeser (1995) argue that political forces explain why the capital cities of dictatorships and unstable democracies are about 40 percent larger than the capital cities of stable democracies. There is little doubt that enough government spending of the right kind can impact a local economy.

[40] A second unplanned Federal place-making policy was the Bayh-Dole Act of 1980. This act allowed researchers to capitalize on ideas developed with the support of Federal Grants. Haussman (2017) shows the economic activity increased around universities after the act.

larger passed along in the form of higher wages and did little to employment. Heckman and Pages (2000) find that between 20 and 70 percent of firm's social security contributions in Latin America are passed along to workers in the form of lower wages. The EITC literature has typically found that most of the benefit of the credit accrues to workers (Rothstein, 2010). The track record of local employment subsidies is more mixed, perhaps they have not been targeted towards places where they would be most effective.

The literature on local employment subsidies is large and varied. Skepticism about direct government spending led the government of Margaret Thatcher towards a different approach: enterprise zones. Sir Peter Hall is generally credited with the idea of reducing taxes and regulation in troubled urban areas. Despite his solid credentials as a social democrat, Hall had been impressed with the success of Hong Kong and Singapore (Hall, 1982) and hypothesized that a similar light-handed touch could engender economic regeneration in England's troubled inner cities.

The Thatcher government embraced Hall's vision, and the United Kingdom began its program of providing tax benefits for firms operating in particular urban locations. Butler (1980) embraced their adoption in the United States. While the Federal government would not begin its program of "empowerment zones" until 1993, a plethora of states experimented with enterprise zones during the 1980s. The hallmark of such zones is that firms derive some tax benefit from operating within a disadvantaged area.

While Enterprise and Empowerment zones are typically targeted at small, urban depressed areas, other countries have offered tax incentives for businesses that locate in larger regions. Since 1987, Italy has offered corporate tax exemptions for firms operating in the poorer Mezzogiorno region, which includes southern Italy and Sicily. These incentives are larger for firms that fall within the government's favored industrial initiatives. France has been offering grants to firms that spread industry away from Paris since the 1960s. The Netherlands also offers targeted spatial incentives for businesses.

Rubin and Richards (1992) provided an early assessment of the effects of these zones in the U.K. and across U.S. states, and concluded that the U.K. experience was relatively unsuccessful. They estimate a cost per job of about fifty thousand pounds, which annualizes to be about $14,000 per job-year, which would be almost $30,000 per job year today. Papke (1994) relied on these figures in her assessment of the difficulties facing enterprise zones in the U.S. Wilder and Wilder and Rubin (1996) summarized a large number of early studies, and found wildly divergent impacts. In some cases, the cost per job was as low as $1,000.

In the past twenty years, the literature on state enterprise zones has grown, but results seem to be quite sensitive to the time period and approach. Bondonio and Engberg (2000) and Greenbaum and Engberg (2004) find little effect on employment or industrial expansion using a standard difference-in-difference approach. O'Keefe (2004) compares enterprise zone areas in California with other areas that are matched using propensity score techniques. She finds a short-run three percent increase in employment associated with enterprise zone status, but less of a long-run effect.

Neumark and Kolko (2010) use particularly fine-grained geography and find no impact of the California program. Ham et al. (2011) also use fine geographies, and work hard to distinguish different programs. They find a negative impact on the unemployment rate, but do not find a positive impact on employment. Yet if enterprise zones reduce unemployment, but don't increase employment, then they must operate by reducing the amount of job seeking, which is a surprising finding.

The most impressive piece of recent research on zones is Busso, Gregory and Kline (2013), which has a relatively positive conclusion about the impact of Federal empowerment zones. They compare labor market outcomes in the first round of empowerment with a treatment group that consists of areas that also competed for zone status. They have access to confidential Census micro data and find positive impacts on employment, earnings and housing prices. They do not see significantly rising rents in empowerment zones.

The Busso, Gregory and Kline (2013) estimates have been used to produce a cost of only $18,000 per job, although it is unclear how many years of employment this means. Nonetheless, this figure is quite low relative to other estimates, which are often closer to $100,000. One interpretation of the Busso, Gregory and Kline (2013) results it that the national Empowerment Zones subsidized employment in places where there were an abundance of potential employers and marginal workers. By contrast, the U.K. Enterprise Zones and state enterprise zones may have been more scattered.

Busso, Gregory and Kline (2013) also find significant capitalization in housing values, but little in rents. Hanson (2009) and Krupka and Noonan (2009) find broadly similar results, again using a synthetic control group based on areas that applied for but did not receive empowerment

zone status.[41] Research on the capitalization of other social interventions into property values is more limited.[42]

Betcherman, Daysal and Pagés (2010) provide a particularly relevant analysis of spatially targeted employment subsidies in Turkey. They find that the employment subsidies did substantially increase jobs, but that the cost was considerable. But they also conclude that the programs were poorly targeted, and as much as 78 percent of the benefits were paid for jobs that would have existed even without the program. They call these costs deadweight losses, but we think that they are better interpreted as a transfer to firms' owners.

Individual Tax Credits/Grants

Location-specific tax benefits towards individuals are less common spatial policies. The U.S. does, of course, have significant spatial heterogeneity in state and local tax rates, but these differences are presumably also tied to differences in spending and services. Norway's grants of tax benefits to the residents of its colder, darker northern climes are an example, but notably these benefits merely subsidize location, not employment or other behaviors.

Intellectually, there would seem to be no reason why places couldn't be targeted by individual tax benefits as much as firm-specific tax credits, yet there are good reasons why these are less common. The primary benefit of standard tax credits would tend to be richer, rather than poorer residents, and this makes them poorly targeted for spatially targeted redistribution. Inducing business location in a particular area may achieve agglomeration related benefits. Inducing people to locate in an area, without associated jobs, would have fewer agglomeration benefits and could potentially make local non-employment problems worse. The political backlash against place-based individual tax subsidies might be significant.

National tax policy can have important spatial dimensions. Gyourko and Sinai (2003), for example, show that the benefits of the home mortgage interest deduction accrue to some places more than others.[43] The 2017 tax reform's changes to the deductibility of state and local taxes represents a major spatial policy, essentially benefitting low tax areas at the expense of high tax areas. Figure 36 shows that states with more state and local spending as a percentage of state

[41] An alternative approach might be to follow Black (1999) and focus on the spatial discontinuity at the edge of the zone that determines where firms receive an employment credit of up to $3,000 for employing a local resident.

[42] There is compelling evidence that quasi-random increases in property taxes, caused by court-mandated property revaluation, is capitalized into low property values (Yinger, Bloom and Boersch-Supan, 2016). Stull and Stull (1991) find evidence for capitalization of difference in local income taxes within the Philadelphia area.

[43] David Albouy has argued that the spatial implications of the deduction are helpful in undoing the spatial distortions created by the income tax itself, which deters people from moving to high income areas.

G.D.P. have lower not working rates. Consequently, this tax code is essential redistribution from low not working rate areas to high not working rate areas through the tax code.

[Figure 36]

There are large literatures on both the capitalization and migration impacts of differences in state taxes. Oates (1969) famously reported significant capitalization of tax differences into property values, but the subsequent literature has been far less clear. Bakija and Slemrod (2004) find that the elderly rich move to avoid high estate taxes, but few more general results have been established on tax based migration.

Federal benefits, such as Unemployment Insurance and Disability, can also spatially targeted.[44] Prior to the 1994 welfare reform, there were significant differences across states in the generosity of the Aid to Families with Dependent Children (AFDC) program. While the program was nation-wide, states could choose their benefit levels, and they paid for part of the benefit.

There is little literature on the capitalization of AFDC differences, but there was a healthy but literature on whether these payments induced migration of the poor. Blank (1988) found that single-parent families were more likely to leave areas with less generous AFDC payments. Borjas (1999) argued that the disproportionate flow of immigrants into California reflected that states particularly high levels of AFDC payments.

While it may be harder to imagine a program that increases nominal payments in some states, program with constant nominal benefits are the norm, and those benefits have greater value in low price states. Since government tax dollars go further when local prices are lower, price heterogeneity also gives an added push to spending more in places where costs are lower (Kaplow, 1996, Glaeser and Saiz, 2004). A ramped up version of the Earned Income Tax Credit that provided a uniform hourly work subsidy would have a more disproportionate real impact in lower income parts of the country.

Regulatory Heterogeneity

The original enterprise zone model also envisioned significant regulatory relief. In practice, these zones were more likely to feature tax relief rather than regulatory relief. In the U.S., this reflects the fact that the national government has little power to override local regulation. Globally, there are many prominent examples of zones that offer a special set of rules to

[44] Bartik and Erickcek's (2014) discussion of targeted training programs does not explicitly focus on spatial targeting, but the possibility is clearly implicit in his discussion.

businesses. The Special Economic Zones of China, for example, were a powerful example of how business formation can be abetted with freedom from China's robust business controls.

Within the U.S., the Devens Enterprise Commission provides a small local example of a zone with light regulation. When Fort Devens shut, the Massachusetts State government attempted to encourage business formation in the area with one-stop permitting. The commission claims have been successful at encouraging new business formation, but there is no academic research documenting its success.

Firms also experience different levels of regulation when they operate in areas that are deemed to be environmentally sensitive. Builders face different regulations when they operate in historic preservation districts. In these cases, historic differences across geography have regulatory consequences that also impact the level of economic activity.

There are also historical accidents that lead to significant regulatory differences. The U.K. Channel Islands are not actually part of the United Kingdom or the European Union. Consequently, they operate under a different set of financial regulations that have made them a hot spot for a variety of financial service firms.

Restricting the supply of new housing restricts migration into particular areas and boost prices in those areas (Glaeser and Gyourko, 2017). We have less evidence on whether other forms of regulation have such impacts. Consequently, one of the best justifications for districts with different types of regulations is that they enable us to experiment with new types of regulations. For example, entrepreneurship districts that relaxed regulations on new businesses would allow us to learn the impact of such interventions.

VII. Place-Based Policies for America

Our theoretical section suggested that public support should shift towards encouraging employment, rather than supporting the not working, in areas where employment responses to earnings are particularly high. Our empirical suggested that employment elasticities in some states, like West Virginia, where much higher than in other states, like Wyoming. Our conclusion is that the policy mix should be used to encourage more employment in West Virginia.

We begin with the two most plausible examples of such place-based actions: targeted location of public activities and infrastructure investment. We then turn to employment subsidies, which are a natural tool for fighting non-employment, but harder to target spatially. Finally, we end

with education interventions, and prodding community colleges to focus more on employability in high not working rate regions.

The Location of Public Activity and Infrastructure Investment

While there are approximately 22 million public sector workers within the U.S., only 2.8 million of those workers are actually in the Federal government. This relatively small employment share necessarily limits the magnitude of any relocation of Federal activities. Moreover, 51 percent of these workers are either in the military or in veteran's affairs, and consequently, any serious relocation policy would need to focus on the military.[45]

While there is the mixed evidence on the employment effects of public activity, the location of military bases does seem positively impact on the local economy (Nakamura and Steinsson, 2014). The harder question, which we cannot answer, is what are the costs of geographic targeting of military spending. Shuttering and re-opening the same base somewhere else seems prohibitively expensive. The best opportunities for geographic targeting occur at the points of base openings and closing. In principle, new bases can be sited and old based can be kept open in areas with more elastic employment responses to labor demand.

The most reasonable proposal might ask the military to incorporate the impacts on local employment into their calculations. If the military actually used cost-benefit analysis in location decisions, it would be straightforward to multiply employment effects with estimates of the externalities from employment and incorporate this total location-specific benefit into calculations.

The Department of Veterans' Affairs is a second large federal employee. The V.A. has fewer spatially lump assets, but it does maintain hospitals and large offices. Again, the department could be encouraged to internalize the local employment impacts when they open and shut facilities, but this would be fundamentally limited by the need to match medical facilities to the location of military retirees. Non-medical V.A employment is more spatially fungible, but it that represents a modest share of the total employment.

While the location decisions of the Federal government could internalize local employment effects, we are doubtful that such policies could ever be significant in practice. The military

[45] Spatial targeting could also be with the much larger set of Federal government contractors. Yet imposing added geographic restrictions on contractors would be cumbersome, and make other objectives, such as supporting minority-owned businesses, more difficult. Moreover, geographic targeting would be quite susceptible to gaming. We suspect that a requirement to use Kentucky-based software providers would lead to re-labeling rather than large-scale employment in Kentucky.

will surely oppose any push to have them internalize non-military objectives. The Veterans' Administration will similarly move only with difficulty.

Federally funded infrastructure projects are perhaps the most popular tool for encouraging local economic development. Yet these projects also have a very mixed record of encouraging local employment (Garin, 2017) and there is an inherent tension between targeting infrastructure towards growing successful areas that need more infrastructure and supporting distressed areas with highly elastic labor supply. America's most glaring infrastructure deficits are visible in large, busy urban areas where airports, like New York's John F. Kennedy Airport, are under maintained and where public transportation and highways are highly congested.

If users are willing to pay for both the operating and capital costs of a project, then it is unlikely to be a white elephant. If modest Federal investment can spur self-financing infrastructure projects in distressed areas then there seems to be little downside risk. But do there exist a large number of such potential projects?

The Tennessee Valley Authority was close to being such a project. The original financing of the T.V.A. came from the Federal government, but the early investment has been repaid. The T.V.A. also benefited from using eminent domain to move thousands of farmers to gain access to waterways, but many of those farmers benefitted from subsequent electricity access. The T.V.A. succeed because it offered a transformative technology – electricity – with abundant demand.

The Trump Administration's infrastructure plan combines a modest amount of Federal seed money meant to spur user fee financed infrastructure. The proposal contains tools for scoring prospective proposals, and the details of the scoring algorithm have not yet been made public. The natural means of incorporating concerns about not working into that structure is to provide extra points in the algorithm based on the number of people who can be reasonably project to find employment as a result of the project. Ideally, the social value of those transitions should be denominated in dollars to make them comparable with other criteria used in the scoring algorithm.

If Federal investment comes with no expectations for user fee financing, then there is more scope for spatial targeting of high not working rate areas, and more risk of white elephants. At this point, most legislatively mandated projects do not come with cost benefit analysis. If such analysis were to become regular, then it would be natural to include the social benefits of employment into the benefits. Even without cost-benefit analysis, the current Highway Trust Fund Apportionment rules could incorporate non-employment effects. Such alterations to the

code would, however, require us to be certain that highway funds spent in high not working rate areas do more to reduce not working rates than highway funds spent in other areas.

In a reformed system with better checks on waste and real cost-benefit analysis, infrastructure could provide a tool for regional support, but without such reforms the downsides remain significant.

Employment Subsidies, Welfare Benefits and Federal Taxes

The norm in U.S. politics is that national policies need to be uniform, even when local heterogeneity argues strongly against such uniformity. Housing subsidies, such as the Low Income Housing Tax Credit, treat Detroit, Houston and San Francisco essentially identically despite their wildly different housing costs and supply conditions. We have tried to make the case that labor supply elasticities are also heterogeneous, and that one-size-fits-all employment policies are similarly mistaken. Stronger employment subsidies are likely to have more benefit in Eastern Tennessee than in San Francisco.

The current Earned Income Tax credit is based on annual earnings. It phases in at low incomes and essentially offers a proportionate increase in earnings in this region. It reaches a maximum value, and for individuals whose earnings are in this region contingent on working, it essentially offers a flat nominal subsidy for working. Finally, it phases out, and in this region, the Earned Income Tax Credit acts as a deterrent on working more.

The Tax Credit can be over $6,000 for individuals with two or three children and earnings of around $16,000. For individuals who do not have children in their households, it represents an extremely modest work subsidy. As we have seen, the overwhelming preponderance of non-working men do not have a child in their homes.

For the Earned Income Tax Credit to be more effective at spurring prime-aged male employment, it would have to be more generous to single-person households. One option would be to affect a straight wage subsidy, perhaps administered through the employer, which would obviously increase the take-home pay per hour of work. One danger of that approach is that it might engender fraud as workers and firms collude to declare that he worker had labored for longer hours at lower wages. If fraud can be effectively contained, an hourly employer-managed wage subsidy has significant advantages in ease of administration and salience. Any system would need a phase out region to be fiscally prudent, and in that region, the credit would still deter work.

A flat cash wage subsidy would provide more push in high not working rate areas because prices are lower. The current maximum payment, which is fixed in dollar terms, already achieves that end. The phase in period, which increases earnings proportionally, does not. Consequently, the move to a dollar wage subsidy, instead of a percent increase, would partially strengthen geographic targeting. A more aggressive approach would increase the size of the wage subsidy in distressed areas, which our estimates suggest would increase employment more per dollar spent.

Another approach is reduce marginal taxes for everyone living in high not working rate areas. This approach is embodied in the 2017 tax reform, which lowers tax rates for many and increased the standard deduction. But it also eliminated the deductibility of state and lower taxes. Effectively, this shift raised taxes in big government states relative to low government states. If local government spending on services like education has significant social value, then this strategy has significant downsides. Yet given the negative correlation between the size of local government and not working rates, it may also reduce the disincentive to work in areas where not working is more endemic.

The actual tax code may be less important for deterring employment than the rules surrounding public benefits, like SNAP assistance, Housing Vouchers and Disability Insurance. These benefits effectively tax employment by decreasing or disappearing entirely with higher earnings. The implicit taxes created by these programs could be reduced in low employment regions, by enabling people who work and earn low incomes to keep more of the benefits. Current implicit tax rates of 30 percent could be reduced to 20 percent for example.

In this section, we focused on increasing spending in high not working rate regions, and we recognize that this could distort migration and lead to high real estate prices. As the theory section made clear, this can be offset if other benefits are removed from the region. We will not analyze appropriate areas to cut, but theoretically, it is possible to reduce non-employment in high not working rate regions while keeping total spending in the region constant and not distorting migration incentives, as long as other non-employment enhancing spending is cut back.

While our model suggested the value of more tailored employment policies, we are notably not calling for local control. Localities often have strong incentives to distort migration to attract the rich and repel the poor. Purely local control over social welfare policy could lead to a race to the bottom where states dismantled their safety nets to get rid of their poorer residents.

Place-Based Education Reform

The data strongly supports the view that education is an extremely powerful determinant of local success and failure. We consequently join those who see investment in human capital as critical for long run growth, even if that investment takes a generation or more.

But education also contains tradeoffs between providing skills that maximize future employability and other objectives. Liberals arts education, naturally, has never accepted pre-professionalism, but even in high schools and community colleges, there are often a diversity of objectives. Those tradeoffs can be tilted towards employment in high not working rate regions.

Currently, the Federal government supports community colleges through Pell Grants and other forms of support. That support could be structure to provide incentives that induce those institutions to focus more on job generating skills. For example, community college could receive bonus payments for admitting students from distressed regions, who are then employed for some number of years post-graduation. At the least, such a program could be tested for impact.

We do not anticipate that such incentives will do much in the classroom. It is difficult to change teaching quality for classes such as remedial writing and mathematics. The more likely impact of such an incentive program is that college administrators would begin experimenting with counseling and promoting more employable majors.

Bartik and Erickcek's (2014) discussion of place-based policies emphasized the possibility for targeted training programs, which might provide skills that are in high local demand. While the track record of adult training programs is mixed at best, we agree with Bartik that there is value is experimenting with targeted training. If there are fixed costs to supporting training in particular locations, then it would make sense to have programs disproportionately in areas with greater need and more elastic labor supply.

Final Thoughts

This paper proposed three plausible justifications for such policies: agglomeration economies, geographic tagging of redistribution and hot spots non-employment reduction. The agglomeration case for spatial redistribution is weak, because we know too little about the exact functional form of agglomeration economies. The case for geographic tagging of redistribution is more plausible, but income heterogeneity within areas is much larger than heterogeneity across areas. Moreover, capitalization effects mean that property owners are likely to reap many of the benefits of geographically targeted policies.

The best case for geographic targeting of policies is that a dollar spent fighting non-employment in a high not working rate area will do more to reduce non-employment than a dollar spent fighting non-employment in a low not working rate area. The empirical evidence for heterogeneous labor supply responses to demand shocks or public interventions is limited, but broadly supportive of the view that reducing the not working rate in some parts of the country is easier than in other parts of the country.

That heterogeneity can either justify added spending in distressed, more elastic areas, or a twist in spending that favors employment in those areas. While infrastructure remains an important investment for America, targeting infrastructure spending towards distressed areas risks producing projects with limited value for users. By contrast, enhanced spending on employment subsidies in high not working rate areas, and perhaps the U.S. as a whole, seems like a more plausible means of reducing not working rates.

REFERENCES

Ades, Alberto F., and Edward L. Glaeser. "Trade and circuses: explaining urban giants." *The Quarterly Journal of Economics*110, no. 1 (1995): 195-227.

Aguiar, Mark, Mark Bils, Kerwin Kofi Charles, and Erik Hurst. *Leisure luxuries and the labor supply of young men*. No. w23552. National Bureau of Economic Research, 2017.

Albouy, David. *Evaluating the efficiency and equity of federal fiscal equalization*. No. w16144. National Bureau of Economic Research, 2010.

Alesina, Alberto, Edward Glaeser, and Bruce Sacerdote. "Work and leisure in the United States and Europe: why so different?." *NBER macroeconomics annual* 20 (2005): 1-64.

Alesina, Alberto, Armando Miano, and Stefanie Stantcheva. " Immigration and Support for Redistribution." (forthcoming).

Andersen, Steffen, Glenn W. Harrison, Morten I. Lau, and E. Elisabet Rutström. "Eliciting risk and time preferences." *Econometrica* 76, no. 3 (2008): 583-618.

Aschauer, David Alan. "Is public expenditure productive?." *Journal of monetary economics* 23, no. 2 (1989): 177-200.

Autor, David., David Dorn, and Gordon Hanson. "The China syndrome: Local labor market effects of import competition in the United States." *American Economic Review* 103, no. 6 (2013): 2121-68.

Autor, David, David Dorn, Gordon Hanson, and Kaveh Majlesi. *A Note on the Effect of Rising Trade Exposure on the 2016 Presidential Election*. Mimeo, MIT, 2016.

Autor, David H., and Mark G. Duggan. "The rise in the disability rolls and the decline in unemployment." *The Quarterly Journal of Economics* 118, no. 1 (2003): 157-206.

Baily, Martin Neil. "Some aspects of optimal unemployment insurance." *Journal of Public Economics* 10, no. 3 (1978): 379-402.

Bakija, Jon, and Joel Slemrod. *Do the rich flee from high state taxes? Evidence from federal estate tax returns*. No. w10645. National Bureau of Economic Research, 2004.

Barro, Robert J., Xavier Sala-i-Martin. "Convergence across states and regions." *Brookings papers on economic activity* (1991): 107-182.

Barsky, Robert B., F. Thomas Juster, Miles S. Kimball, and Matthew D. Shapiro. "Preference parameters and behavioral heterogeneity: An experimental approach in the health and retirement study." *The Quarterly Journal of Economics* 112, no. 2 (1997): 537-579.

Bartik, Timothy J. "Who benefits from state and local economic development policies?." (1991).

Bartik, Timothy J. "How Effects of Local Labor Demand Shocks Vary with the Initial Local Unemployment Rate." *Growth and Change* 46, no. 4 (2015): 529-557.

Bartik, Timothy J., and George Erickcek. "Simulating the effects of the tax credit program of the Michigan Economic Growth Authority on job creation and fiscal benefits." *Economic Development Quarterly* 28, no. 4 (2014): 314-327.

Baum-Snow, Nathaniel. "Did highways cause suburbanization?." *The Quarterly Journal of Economics* 122, no. 2 (2007): 775-805.

Baum-Snow, Nathaniel, Matthew E. Kahn. "Effects of urban rail transit expansions: Evidence from sixteen cities, 1970-2000." *Brookings-Wharton papers on urban affairs* (2005): 147-206.

Berry, Christopher R., and Edward L. Glaeser. "The divergence of human capital levels across cities." *Papers in regional science* 84, no. 3 (2005): 407-444.

Betcherman, Gordon, N. Meltem Daysal, and Carmen Pagés. "Do employment subsidies work? Evidence from regionally targeted subsidies in Turkey." *Labour Economics* 17, no. 4 (2010): 710-722.

Black, Sandra E. "Do better schools matter? Parental valuation of elementary education." *The Quarterly Journal of Economics* 114, no. 2 (1999): 577-599.

Blakely, Tony A., Sunny CD Collings, and June Atkinson. "Unemployment and suicide. Evidence for a causal association?." *Journal of Epidemiology & Community Health* 57, no. 8 (2003): 594-600.

Blanchard, Olivier Jean, Lawrence F. Katz. "Regional evolutions." Brookings papers on economic activity 1992, no. 1 (1992): 1-75.

Blank, Rebecca M. "The effect of welfare and wage levels on the location decisions of female-headed households." *Journal of Urban Economics* 24, no. 2 (1988): 186-211.

Blundell, Richard, and Thomas MaCurdy. "Labor supply: A review of alternative approaches." In *Handbook of labor economics*, vol. 3, pp. 1559-1695. Elsevier, 1999.

Boldrin, Michele, and Fabio Canova. "Inequality and convergence in Europe's regions: reconsidering European regional policies." *Economic policy* 16, no. 32 (2001): 206-253.

Bondonio, Daniele, and John Engberg. "Enterprise zones and local employment: evidence from the states' programs." *Regional Science and Urban Economics* 30, no. 5 (2000): 519-549.

Borjas, George J. "Immigration and welfare magnets." *Journal of labor economics* 17, no. 4 (1999): 607-637.

Borjas, George J., and Lynette Hilton. "Immigration and the welfare state: Immigrant participation in means-tested entitlement programs." The quarterly journal of economics 111, no. 2 (1996): 575-604.

Boustan, Leah P., and Robert A. Margo. "A silver lining to white flight? White suburbanization and African–American homeownership, 1940–1980." *Journal of Urban Economics* 78 (2013): 71-80.

Braga, Anthony A., Andrew V. Papachristos, and David M. Hureau. "The effects of hot spots policing on crime: An updated systematic review and meta-analysis." *Justice quarterly* 31, no. 4 (2014): 633-663.

Busso, Matias, Jesse Gregory, and Patrick Kline. "Assessing the incidence and efficiency of a prominent place based policy." The American Economic Review 103, no. 2 (2013): 897-947.

Butler, Stuart M. *Enterprise zones: pioneering in the inner city*. Washington: Heritage Foundation, 1980.

Cappelen, Aadne, Fulvio Castellacci, Jan Fagerberg, and Bart Verspagen. "The impact of EU regional support on growth and convergence in the European Union." *JCMS: Journal of Common Market Studies* 41, no. 4 (2003): 621-644.

Case, Anne, and Angus Deaton. "Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century." *Proceedings of the National Academy of Sciences* 112, no. 49 (2015): 15078-15083.

Chodorow-Reich, G. "Geographic Cross-Sectional Fiscal Multipliers: What Have We Learned?" (2017).

Chernobai, Ekaterina, Michael Reibel, and Michael Carney. "Nonlinear spatial and temporal effects of highway construction on house prices." *The Journal of Real Estate Finance and Economics* 42, no. 3 (2011): 348-370.

Chetty, Raj. "A general formula for the optimal level of social insurance." *Journal of Public Economics* 90, no. 10-11 (2006): 1879-1901.

Chetty, Raj, Adam Guren, Day Manoli, and Andrea Weber. "Does indivisible labor explain the difference between micro and macro elasticities? A meta-analysis of extensive margin elasticities." *NBER macroeconomics Annual* 27, no. 1 (2013): 1-56.

Chetty, Raj, and Nathaniel Hendren. The impacts of neighborhoods on intergenerational mobility i: Childhood exposure effects. No. w23001. National Bureau of Economic Research, 2016.

Clark, Andrew E. "Unemployment as a social norm: Psychological evidence from panel data." *Journal of labor economics* 21, no. 2 (2003): 323-351.

Clark, Andrew E., and Andrew J. Oswald. "Unhappiness and unemployment." *The Economic Journal* 104, no. 424 (1994): 648-659.

Clark, Kim B., Lawrence H. Summers. "Labor market dynamics and unemployment: a reconsideration." *Brookings Papers on Economic Activity* 1979, no. 1 (1979): 13-72.

Coglianese, John. "The Rise of In-and-Outs: Declining Labor Force Participation of Prime Age Men." (2017).

Cohen, Alma, and Liran Einav. "Estimating risk preferences from deductible choice." *American economic review* 97, no. 3 (2007): 745-788.

Combes, Pierre-Philippe, Gilles Duranton, and Laurent Gobillon. "Spatial wage disparities: Sorting matters!" Journal of Urban Economics 63, no. 2 (2008): 723-742.

Combes, Pierre- Philippe, Gilles Duranton, Laurent Gobillon, Diego Puga, and Sébastien Roux. "The productivity advantages of large cities: Distinguishing agglomeration from firm selection." *Econometrica* 80, no. 6 (2012): 2543-2594.

Conley, Timothy G., and Giorgio Topa. "Socio- economic distance and spatial patterns in unemployment." *Journal of Applied Econometrics* 17, no. 4 (2002): 303-327.

Council of Economic Advisers. 2016. "The long-term decline in prime-age male labor force participation." Technical report.

Dall'Erba, Sandy, and Julie Le Gallo. "The impact of EU regional support on growth and employment." *Czech Journal of Economics and Finance* 57, no. 7 (2007): 325-340.

Dao, Mai, Davide Furceri, and Prakash Loungani. "Regional labor market adjustment in the United States: trend and cycle." Review of Economics and Statistics 99, no. 2 (2017): 243-257.

Dube, Arindrajit, Ethan Kaplan, and Ben Zipperer. "Excess Capacity and Heterogeneity in the Fiscal Multiplier: Evidence from the Obama Stimulus Package." *University of Maryland, working paper* (2015).

Duranton, Gilles, and Diego Puga. "Micro-foundations of urban agglomeration economies." Handbook of regional and urban economics 4 (2004): 2063-2117.

Duranton, Gilles, and Matthew A. Turner. "Urban growth and transportation." Review of Economic Studies 79, no. 4 (2012): 1407-1440.

Eberstadt, Nicholas. Men without work: America's invisible crisis. Templeton Foundation Press, 2016.

Eissa, Nada, and Jeffrey B. Liebman. "Labor supply response to the earned income tax credit." *The quarterly journal of economics* 111, no. 2 (1996): 605-637.

Faggio, Giulia, and Henry Overman. "The effect of public sector employment on local labour markets." *Journal of urban economics* 79 (2014): 91-107.

Flood, Sarah, Miriam King, Steven Ruggles, and J. Robert Warren. Integrated Public Use Microdata Series, Current Population Survey: Version 5.0. [dataset]. Minneapolis: University of Minnesota, 2017. https://doi.org/10.18128/D030.V5.0.

French, Eric, and Jae Song. "The effect of disability insurance receipt on labor supply." *American Economic Journal: Economic Policy* 6, no. 2 (2014): 291-337.

Ganong, Peter, and Daniel Shoag. "Why has regional income convergence in the US declined?." *Journal of Urban Economics* 102 (2017): 76-90.

Garin, Andrew. " "Putting America to Work, Where? The Limits of Infrastructure Construction as a Locally Targeted Employment Policy." (2017).

Glaeser, Edward L., and Joshua D. Gottlieb. "The Economics of Place Making Policies." *Brookings papers on economic activity* (2008): 155-253.

Glaeser, Edward L., Joshua D. Gottlieb, and Oren Ziv. "Unhappy cities." *Journal of labor economics* 34, no. S2 (2016): S129-S182.

Glaeser, Edward, and Joseph Gyourko. *The economic implications of housing supply*. No. w23833. National Bureau of Economic Research, 2017.

Glaeser, Edward L., and Albert Saiz. "The Rise of the Skilled City." *Brookings-Wharton Papers on Urban Affairs* 2004, no. 1 (2004): 47-105.

Glaeser, Edward L., and Raven E. Saks. "Corruption in America." *Journal of public Economics* 90, no. 6 (2006): 1053-1072.

Glaeser, Edward L., José A Scheinkman, and Andrei Shleifer. "Economic growth in a cross-section of cities." *Journal of monetary economics* 36, no. 1 (1995): 117-143.

Glaeser, Edward L., and Kristina Tobio. *The rise of the sunbelt*. No. w13071. National Bureau of Economic Research, 2007.

Glaeser, Edward L., and Bryce A. Ward. "The causes and consequences of land use regulation: Evidence from Greater Boston." *Journal of Urban Economics* 65, no. 3 (2009): 265-278.

Goldin, Claudia Dale, and Lawrence F. Katz. *The race between education and technology*. Harvard University Press, 2009.

Gordon, Robert J. "The welfare cost of higher unemployment." *Brookings Papers on Economic Activity* 1973, no. 1 (1973): 133-205.

Gramlich, Edward M. "Infrastructure investment: A review essay." *Journal of economic literature* 32, no. 3 (1994): 1176-1196.

Greenbaum, R., & Engberg, J. (2004). The Impact of State Enterprise Zones on Urban Manufacturing Establishments. *Journal of Policy Analysis and Management, 23*(2), 315-339.

Greenstone, Michael, Richard Hornbeck, and Enrico Moretti. "Identifying agglomeration spillovers: Evidence from winners and losers of large plant openings." *Journal of Political Economy* 118, no. 3 (2010): 536-598.

Gruber, Jonathan. "The incidence of payroll taxation: evidence from Chile." *Journal of labor economics* 15, no. S3 (1997): S72-S101.

Gyourko, Joseph, Albert Saiz, and Anita Summers. "A new measure of the local regulatory environment for housing markets: The Wharton Residential Land Use Regulatory Index." *Urban Studies* 45, no. 3 (2008): 693-729.

Gyourko, Joseph, and Todd Sinai. "The spatial distribution of housing- related ordinary income tax benefits." *Real Estate Economics* 31, no. 4 (2003): 527-575.

Hajek, André. "Life satisfaction and unemployment-the role of voluntariness and job prospects." (2013).

Hall, Peter. "Enterprise zones: a justification." *International Journal of Urban and Regional Research* 6, no. 3 (1982): 416-421.

Hall, Robert E. "Turnover in the labor force." *Brookings Papers on Economic Activity* 1972, no. 3 (1972): 709-764.

Hall, Robert E. "Why is the unemployment rate so high at full employment?." *Brookings papers on economic activity* 1970, no. 3 (1970): 369-410.

Ham, John C., Charles Swenson, Ayşe İmrohoroğlu, and Heonjae Song. "Government programs can improve local labor markets: Evidence from state enterprise zones, federal empowerment zones and federal enterprise community." *Journal of Public Economics* 95, no. 7 (2011): 779-797.

Hanson, Andrew. "Local employment, poverty, and property value effects of geographically-targeted tax incentives: An instrumental variables approach." *Regional Science and Urban Economics* 39, no. 6 (2009): 721-731.

Hausman, Naomi. "University Innovation and Local Economic Growth." *Maurice Falk Institute for Economic Research in Israel. Discussion paper series.* 5 (2017): 1-63.

Heckman, James J. and Carmen Pagés. *The cost of job security regulation: evidence from Latin American labor markets*. No. w7773. National bureau of economic research, 2000.

Hofferth, Sandra, Sarah M. Flood, and Matthew Sobek. American Time Use Survey Data Extract System: Version 2.4 [Machine-readable database]. Maryland Population Research Center, University of Maryland, College Park, Maryland, and Minnesota Population Center, University of Minnesota, Minneapolis, Minnesota, 2013. http://www.atusdata.org.

Holmes, Thomas J. "The effect of state policies on the location of manufacturing: Evidence from state borders." *Journal of Political Economy* 106, no. 4 (1998): 667-705.

Hsieh, Chang-Tai, and Enrico Moretti. "Housing Constraints and Spatial Misallocation." (2017).

Kaplow, Louis. "The optimal supply of public goods and the distortionary cost of taxation." *National Tax Journal* (1996): 513-533.

Killewald, Alexandra. "Money, work, and marital stability: Assessing change in the gendered determinants of divorce." *American Sociological Review* 81, no. 4 (2016): 696-719.

Kleiner, Morris M., and Evgeny Vorotnikov. "Analyzing occupational licensing among the states." *Journal of Regulatory Economics* 52, no. 2 (2017): 132-158.

Kline, Patrick, and Enrico Moretti. "Local economic development, agglomeration economies, and the big push: 100 years of evidence from the Tennessee Valley Authority." *The Quarterly Journal of Economics* 129, no. 1 (2013): 275-331.

Kostol, Andreas Ravndal, and Magne Mogstad. "How financial incentives induce disability insurance recipients to return to work." *American Economic Review* 104, no. 2 (2014): 624-55.

Kposowa, Augustine J. "Unemployment and suicide: a cohort analysis of social factors predicting suicide in the US National Longitudinal Mortality Study." *Psychological medicine* 31, no. 1 (2001): 127-138.

Krueger, Alan B. "Where have all the workers gone?." *Brookings papers on economic activity* (forthcoming)

Krupka, Douglas J., and Douglas S. Noonan. "Empowerment Zones, neighborhood change and owner-occupied housing." *Regional Science and Urban Economics* 39, no. 4 (2009): 386-396.

Lindbeck, Assar, Sten Nyberg, and Jörgen W. Weibull. "Social norms and economic incentives in the welfare state." *The Quarterly Journal of Economics* 114, no. 1 (1999): 1-35.

Maestas, Nicole, Kathleen J. Mullen, and Alexander Strand. "Does disability insurance receipt discourage work? Using examiner assignment to estimate causal effects of SSDI receipt." *American Economic Review* 103, no. 5 (2013): 1797-1829.

Meyer, Bruce D., and Dan T. Rosenbaum. "Welfare, the earned income tax credit, and the labor supply of single mothers." *The quarterly journal of economics* 116, no. 3 (2001): 1063-1114.

Miller, Cynthia, Lawrence F. Katz, Gilda Azurdia, Adam Isen, and Caroline B. Schultz. "Expanding the Earned Income Tax Credit for Workers Without Dependent Children: Interim Findings from the Paycheck Plus Demonstration in New York City." (2017).

Moretti, Enrico. "Human capital externalities in cities." *Handbook of regional and urban economics* 4 (2004): 2243-2291.

Moretti, Enrico. "Local labor markets." *Handbook of labor economics* 4 (2011): 1237-1313.

Munnell, Alicia H. "Policy watch: infrastructure investment and economic growth." *Journal of economic perspectives* 6, no. 4 (1992): 189-198.

Nakamura, Emi, and Jon Steinsson. "Fiscal stimulus in a monetary union: Evidence from US regions." *The American Economic Review* 104, no. 3 (2014): 753-792.

Neumark, David, and Jed Kolko. "Do enterprise zones create jobs? Evidence from California's enterprise zone program." *Journal of Urban Economics* 68, no. 1 (2010): 1-19.

Neumark, David, and William Wascher. "Does a higher minimum wage enhance the effectiveness of the Earned Income Tax Credit?." *ILR Review* 64, no. 4 (2011): 712-746.

Oates, Wallace E. "The effects of property taxes and local public spending on property values: An empirical study of tax capitalization and the Tiebout hypothesis." *Journal of political economy* 77, no. 6 (1969): 957-971.

O'Keefe, Suzanne. "Job creation in California's enterprise zones: a comparison using a propensity score matching model." *Journal of Urban Economics* 55, no. 1 (2004): 131-150.

Papke, Leslie E. "Tax policy and urban development: evidence from the Indiana enterprise zone program." *Journal of Public Economics* 54, no. 1 (1994): 37-49.

Platt, Stephen. "Unemployment and suicidal behaviour: a review of the literature." *Social science & medicine* 19, no. 2 (1984): 93-115.

Rauch, James E. "Productivity gains from geographic concentration of human capital: evidence from the cities." *Journal of urban economics* 34, no. 3 (1993): 380-400.

Rothstein, Jesse. "Is the EITC as good as an NIT? Conditional cash transfers and tax incidence." *American Economic Journal: Economic Policy* 2, no. 1 (2010): 177-208.

Rubin, Barry M., and Craig M. Richards. "A transatlantic comparison of enterprise zone impacts: The British and American experience." *Economic Development Quarterly* 6, no. 4 (1992): 431-443.

Ruggles, Steven, Katie Genadek, Ronald Goeken, Josiah Grover, and Matthew Sobek. Integrated Public Use Microdata Series: Version 7.0 [dataset]. Minneapolis: University of Minnesota, 2017. https://doi.org/10.18128/D010.V7.0.

Schleicher, David. "Stuck! The Law and Economics of Residential Stagnation." *Yale Law Journal* 127, no. 1 (2017).

Smith, James P., and Finis R. Welch. "Black economic progress after Myrdal." *Journal of Economic Literature* 27, no. 2 (1989): 519-564.

Stull, William J., and Judith C. Stull. "Capitalization of local income taxes." *Journal of Urban Economics* 29, no. 2 (1991): 182-190.

Topa, Giorgio. "Social interactions, local spillovers and unemployment." *The Review of Economic Studies* 68, no. 2 (2001): 261-295.

Wilder, Margaret G., and Barry M. Rubin. "Rhetoric versus reality: A review of studies on state enterprise zone programs." *Journal of the American Planning Association* 62, no. 4 (1996): 473-491.

Winkelmann, Rainer. "Unemployment and happiness." *IZA World of Labor* (2014).

Yinger, John, Howard S. Bloom, and Axel Boersch-Supan. *Property taxes and house values: The theory and estimation of intrajurisdictional property tax capitalization*. Elsevier, 2016.

APPENDIX 1: Proofs

Proof of Proposition 1: Let the government's objective function be denoted W(.), and using the notation $\frac{\partial W}{\partial x_p} = W_x$ and $\frac{\partial^2 W}{\partial x_p \partial y_p} = W_{xy}$, then:

(A1) $W_e = F_p(c_p^*)\left(V'(w_p + e_p) - \vartheta\right) + V'(w_p + e_p) f_p(c_p^*)\vartheta(b_p + k - e_p)$

(A2) $W_b = \left(1 - F_p(c_p^*)\right)\left(V'(d_p + b_p) - \vartheta\right) - V'(d_p + b_p) f_p(c_p^*)\vartheta(b_p + k - e_p)$

(A3) $W_{ee} = V"(w_p + e_p)\vartheta F_p(c_p^*) + V'(w_p + e_p)\left(f_p(c_p^*)\left(V'(w_p + e_p) - 2\vartheta\right) + V'(w_p + e_p) f'_p(c_p^*)\vartheta(b_p + k - e_p)\right)$

(A4) $W_{bb} = V"(d_p + b_p)\left(1 - F_p(c_p^*)\right)\vartheta + V'(d_p + b_p)\left(f_p(c_p^*)\left(V'(d_p + b_p) - 2\vartheta\right) + V'(d_p + b_p) f'_p(c_p^*)\vartheta(b_p + k - e_p)\right)$

(A5) $W_{eb} = \left(\vartheta V'(w_p + e_p) + \vartheta V'(d_p + b_p) - V'(d_p + b_p)V'(w_p + e_p)\right) f_p(c_p^*) - V'(d_p + b_p)V'(w_p + e_p) f'_p(c_p^*)\vartheta(b_p + k - e_p)$

As long as $f'_p(c_p^*)$ is small, since $\vartheta > V'(w_p + e_p)$, $W_{eb} > 0$.

Optimality implies that $b_p + k > e_p$ (otherwise $V'(w_p + e_p) > \vartheta > V'(d_p + b_p)$ which is incompatible with $w_p > d_p$). The condition that V(.) is sufficiently concave ensures that $W_{ee} < 0$, $W_{bb} < 0$ and $W_{ee}W_{bb} > W_{eb}^2$, and that $-W_{ee} > W_{eb}$ and $-W_{bb} > W_{eb}$.

Differentiation with respect to w_p yields

(A6) $W_{eW} = V"(w_p + e_p)\left(F_p(c_p^*) + f_p(c_p^*)\vartheta(b_p + k - e_p)\right) + V'(w_p + e_p)\left(f_p(c_p^*)\left(V'(w_p + e_p) - \vartheta\right) + \left(V'(w_p + e_p)\right)^2 f'_p(c_p^*)\vartheta(b_p + k - e_p)\right)$

(A7) $W_{bW} = -V'(w_p + e_p) f_p(c_p^*)\left(V'(d_p + b_p) - \vartheta\right) - V'(d_p + b_p)V'(w_p + e_p) f'_p(c_p^*)\vartheta(b_p + k - e_p) < 0$

As $V'(w_p + e_p) < \vartheta < V'(d_p + b_p)$, both terms are negative as long as $f'_p(c_p^*)$ is small, and standard formulae for comparative statics (for any exogenous variable Z $\frac{de}{dZ} = \frac{-W_{eZ}W_{bb} + W_{bZ}W_{eb}}{W_{ee}W_{bb} - W_{eb}^2}$ and $\frac{db}{dZ} = \frac{-W_{bZ}W_{ee} + W_{eZ}W_{eb}}{W_{ee}W_{bb} - W_{eb}^2}$), implies that $\frac{de_p}{dw_p} < 0$ and $\frac{db_p}{dw_p} < 0$.

Differentiation with respect to k yields:

(A8) $W_{ek} = V'(w_p + e_p) f_p(c_p^*)\vartheta = -W_{bk}$

As $-W_{ee} > W_{eb}$ and $-W_{bb} > W_{eb}$, this implies that $\frac{de_p}{dk} > 0 > \frac{db_p}{dk}$.

Differentiation with respect to d_p yields

(A9) $$W_{ed} = -f_p(c_p^*)V'(d_p + b_p)(V'(w_p + e_p) - \vartheta) - V'(d_p + b_p)V'(w_p + e_p)f'_p(c_p^*)\vartheta(b_p + k - e_p)$$

(A10) $$W_{bd} = V"(d_p + b_p)\left(1 - F_p(c_p^*) + f_p(c_p^*)\vartheta(b_p + k - e_p)\right) + V'(d_p + b_p)f_p(c_p^*)(V'(d_p + b_p) - \vartheta) + \left(V'(d_p + b_p)\right)^2 f'_p(c_p^*)\vartheta(b_p + k - e_p)$$

Both terms are negative when $f'_p(c_p^*)$ is small and V(.) is sufficiently convex. Consequently, $\frac{de_p}{dd_p} < 0$ and $\frac{db_p}{dd_p} < 0$.

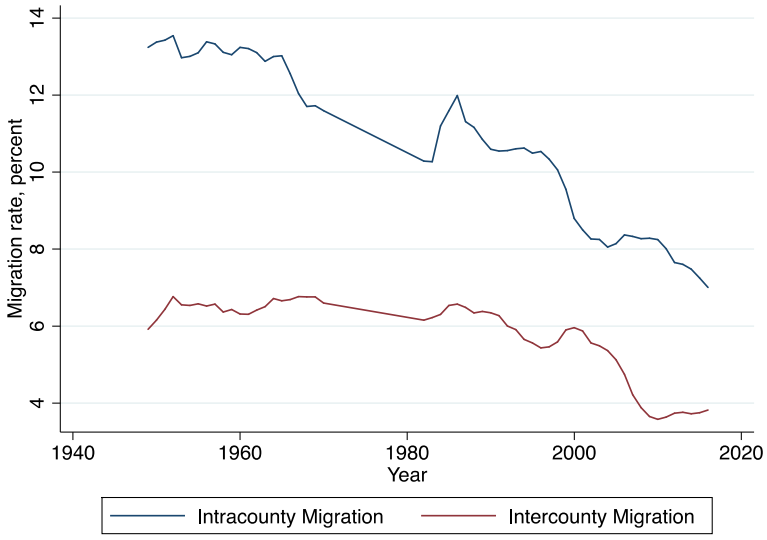

FIGURE 1. DECLINE IN MIGRATION RATES

Notes: Three year rolling average rates where available for US households. Data is missing 1972-1975 and 1976-1980.

Source: Authors' calculations using U.S. Census Annual Geographical Mobility Rates.

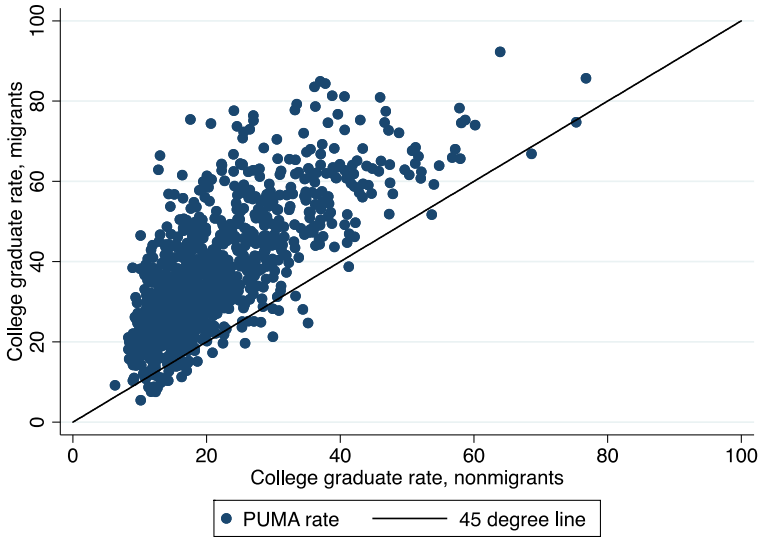

FIGURE 2. MIGRANT COLLEGE EDUCATION RATE, 2000

Notes: College graduate rate defined as share of prime male respondents reporting completion of four or more years of college. Mean education rate for interstate out-migrants from a Public Use Microarea (PUMA) is compared to education rate of non-migrants from the outgoing PUMA. Includes prime male respondents excluding institutionalized individuals, members of the Armed Forces, and individuals with missing data. Rates calculated at outgoing migrant PUMA level using Census survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) 2000 Census data.

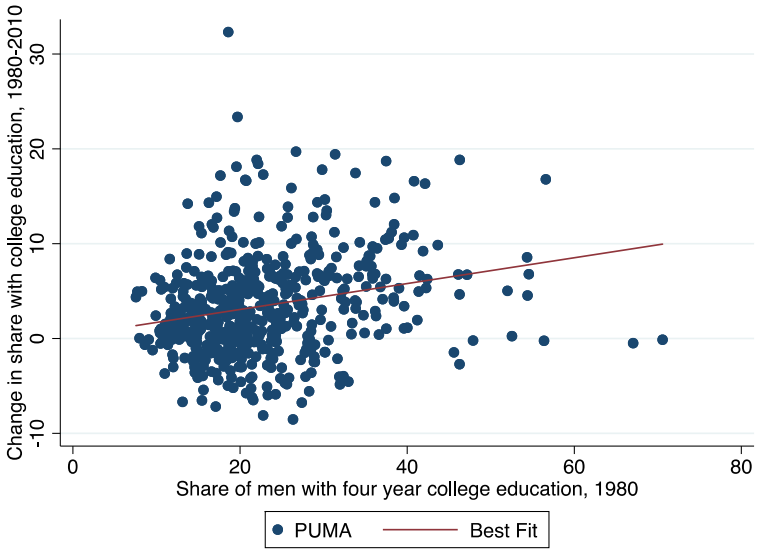

FIGURE 3. COLLEGE EDUCATION RATES AT PUMA LEVEL, 1980-2010

Notes: Pooled 2009-2011 American Community Survey and 1980 Census prime male respondents, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. College education rates are calculated using the fractions of men completing four or more years of college. Rates calculated for prime men at the Consistent Public Use Microdata Areas (PUMAs) using Census / ACS survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) American Community Survey and 1980 Census data.

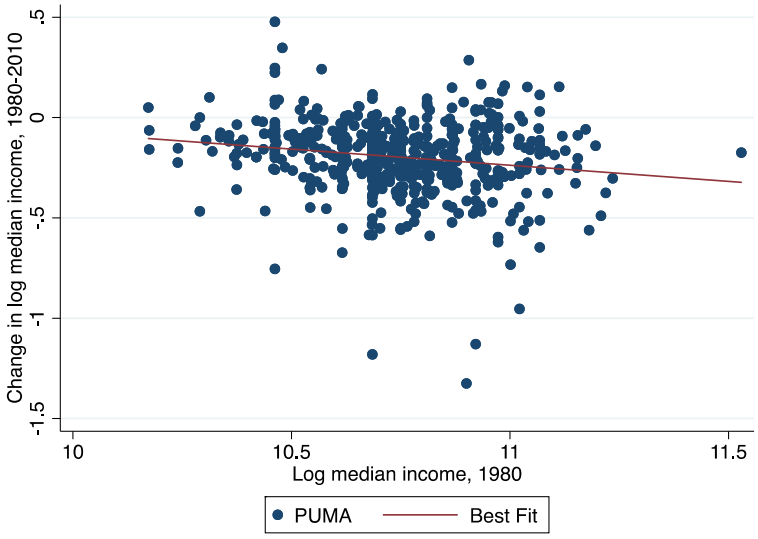

FIGURE 4. MEDIAN INCOME GROWTH AT PUMA LEVEL, 1980-2010

Notes: Pooled 2009-2011 American Community Survey and 1980 Census prime male respondents, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Log median total personal incomes expressed in 2016 dollars using CPI and calculated for prime men at the Consistent Public Use Microdata Areas (PUMAs) using Census / ACS survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) American Community Survey and 1980 Census data.

FIGURE 5. PERSISTENCE OF NOT WORKING RATES, 1980-2010

Notes: Pooled 2009-2011 American Community Survey and 1980 Census prime male respondents, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Rates calculated in 1980-2010 Consistent Public Use Microdata Areas (PUMAs) using Census / ACS survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) American Community Survey and 1980 Census data.

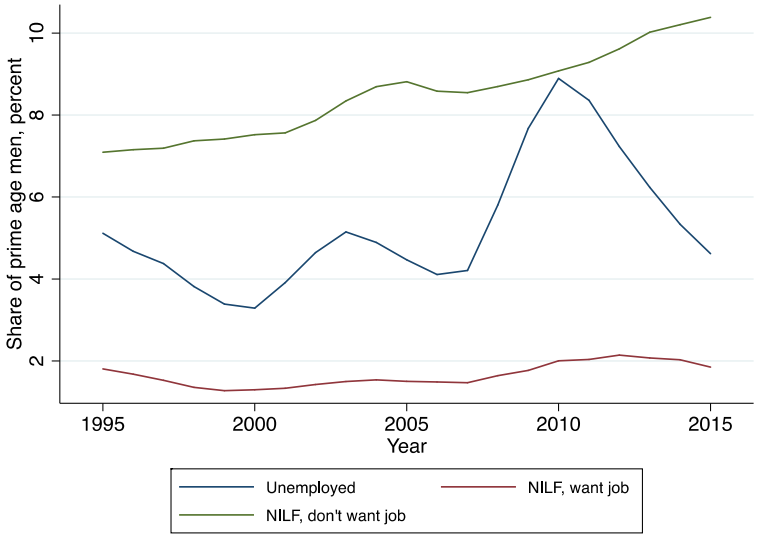

FIGURE 6. GROWTH IN NOT WORKING RATE CATEGORIES

Notes: Three year rolling average using prime male respondents from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

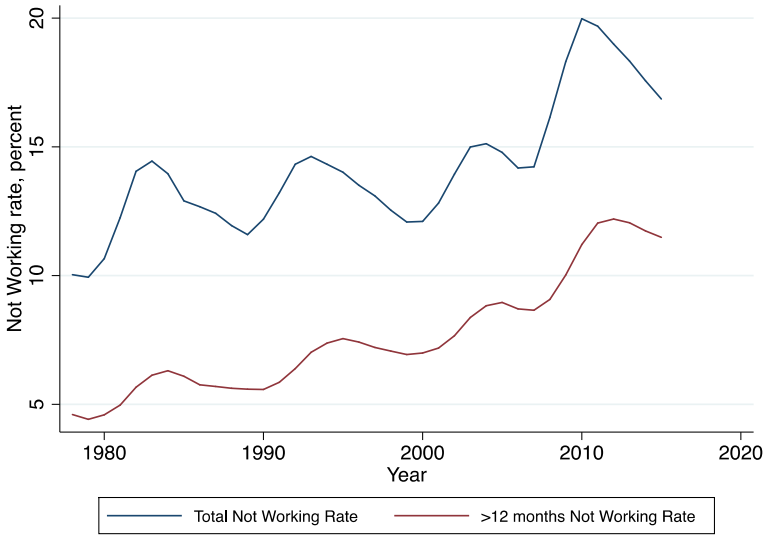

FIGURE 7. CHANGE IN NONEMPLOYMENT RATE

Notes: Three year rolling average using prime male respondents from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

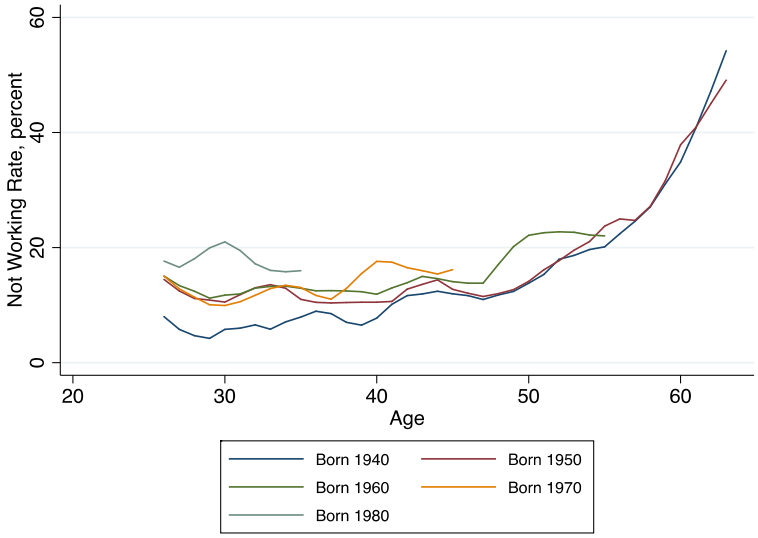

FIGURE 8. NOT WORKING RATES BY COHORT AND AGE

Notes: Three year rolling average using prime male respondents from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

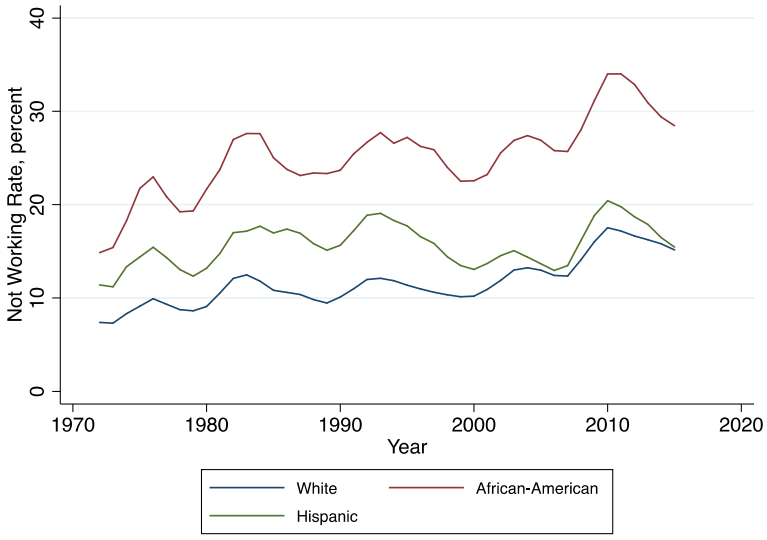

FIGURE 9. NOT WORKING RATES BY RACE

Notes: Three year rolling average using prime male respondents from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

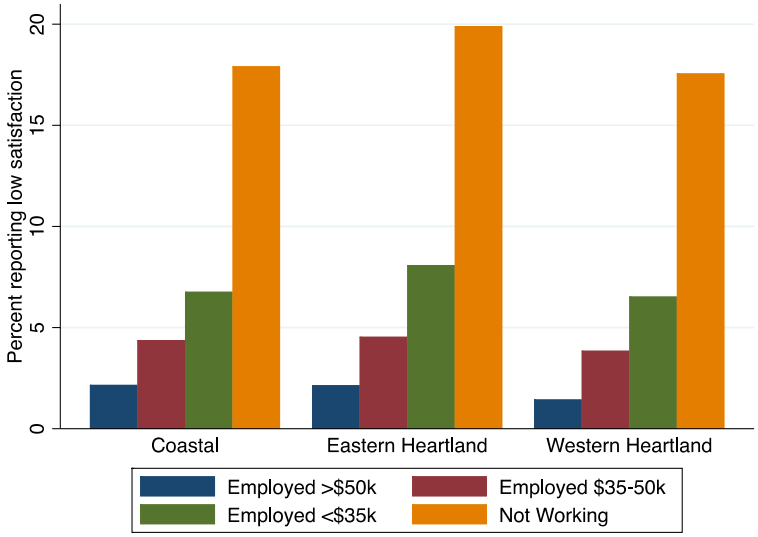

FIGURE 10. LIFE SATISFACTION

Notes: Share of prime-aged men in the continental 48 states reporting they are dissatisfied or very dissatisfied. Pooled 2005-2010 data from the Behavioral Risk Factor Surveillance System. Rates calculated using survey weights.

Source: Authors' calculations using Behavioral Risk Factor Surveillance System data from the Centers for Disease Control and Prevention.

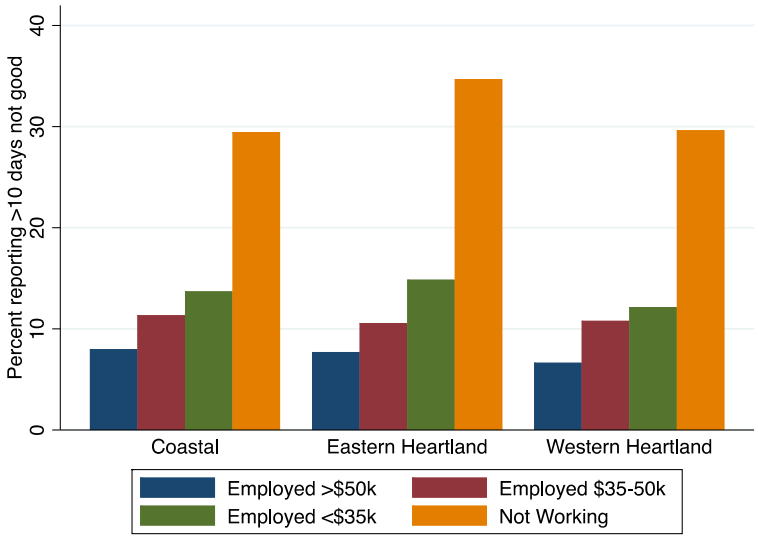

FIGURE 11. MENTAL HEALTH ISSUES

Notes: Share of prime-aged men in the continental 48 states reporting their mental health was not good on at least 10 days a month. Pooled 2011-2016 data from the Behavioral Risk Factor Surveillance System. Rates calculated using survey weights.

Source: Authors' calculations using Behavioral Risk Factor Surveillance System data from the Centers for Disease Control and Prevention.

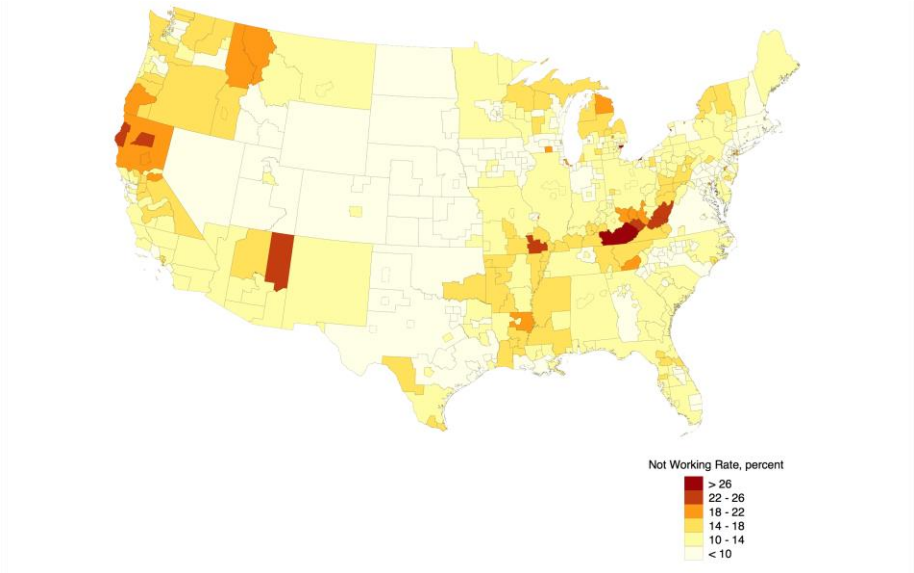

FIGURE 12. 1980 PRIME MALE NOT WORKING RATES BY PUMA

Notes: Prime male respondents in the continental 48 states, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Rates calculated 1980-2010 Consistent Public Use Microdata Areas using Census survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) 1980 Census data.

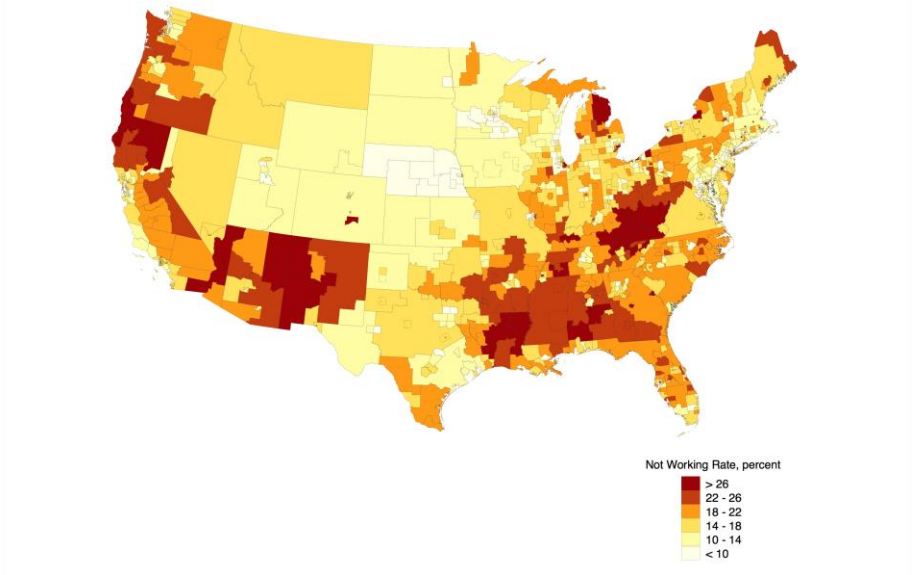

FIGURE 13. 2015 PRIME MALE NOT WORKING RATES BY PUMA

Notes: Pooled 2014-2016 American Community Survey prime male respondents in the continental 48 states, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Rates calculated 2000-2010 Consistent Public Use Microdata Areas using ACS survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) American Community Survey data.

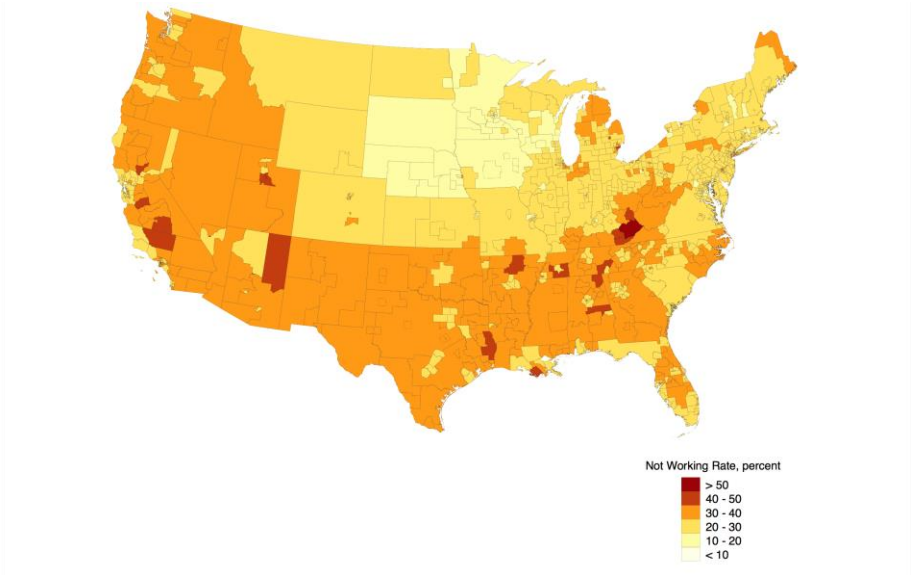

FIGURE 14. 2015 PRIME FEMALE NOT WORKING RATES BY PUMA

Notes: Pooled 2014-2016 American Community Survey prime female respondents in the continental 48 states, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Rates calculated 2000-2010 Consistent Public Use Microdata Areas using ACS survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) American Community Survey data.

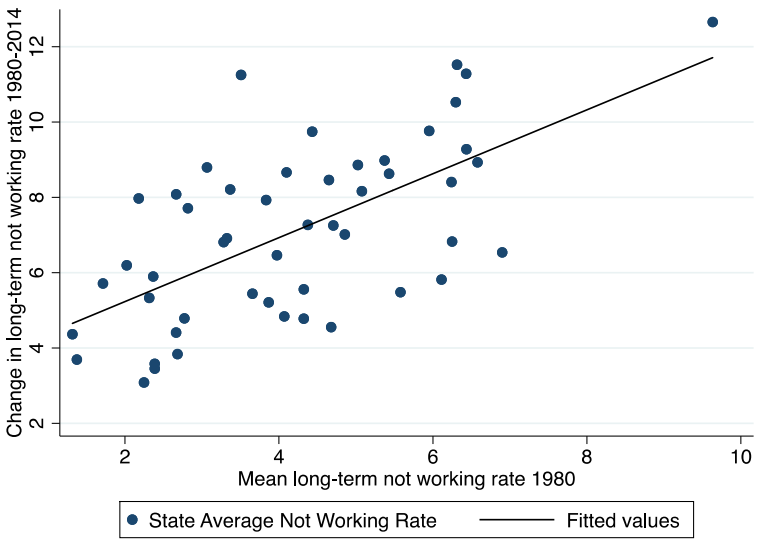

FIGURE 15. CHANGE IN LONG-TERM NOT WORKING RATE 1980-2014

Notes: Long-term not working rate calculated for men reporting they have not been employed in the past 12 months. Three year rolling average using prime male respondents from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

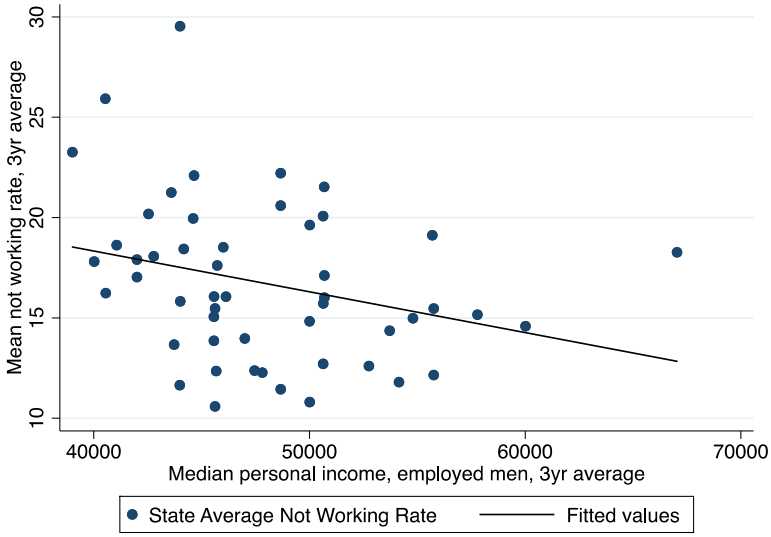

FIGURE 16. CORRELATION BETWEEN NOT WORKING RATES AND INCOMES, 2014-2016

Notes: Three year rolling average using prime male respondents from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Median total personal income is calculated in 2016 real dollars for employed men, excluding those reporting negative incomes. Mean rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

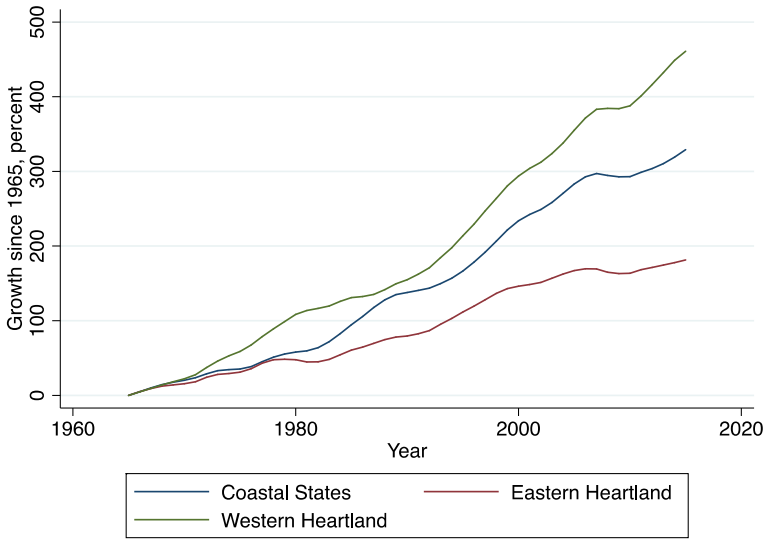

FIGURE 17. GDP GROWTH BY REGION

Notes: Growth in average real GDP in 2009 dollars. Regional GDP calculated using three year rolling average.

Source: Authors' calculations using U.S. Bureau of Economic Analysis state GDP data.

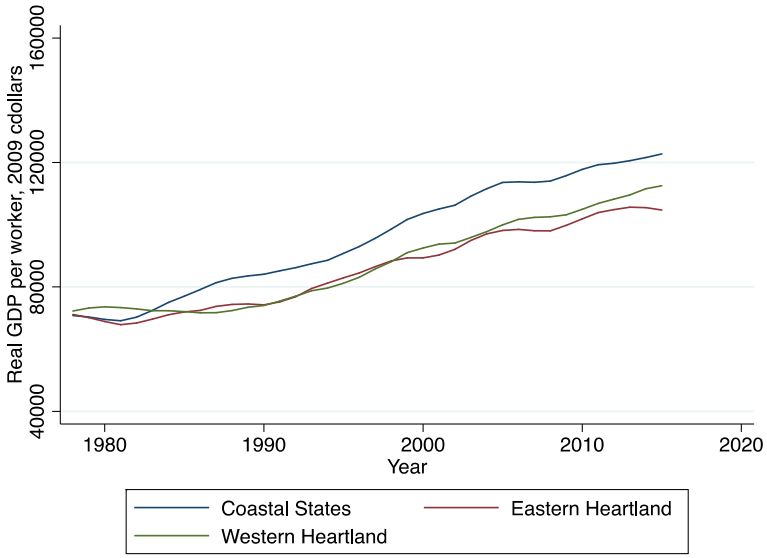

FIGURE 18. GDP PER WORKER GROWTH BY REGION

Notes: Real GDP per worker in 2009 dollars calculated using population of working adults 18-64 from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing employment data. GDP and calculated using three year rolling average. Working Population calculated using three year rolling averages using ASEC supplement survey weights.

Source: Authors' calculations using U.S. Bureau of Economic Analysis state GDP and Integrated Public Use Microdata Series (IPUMS) Current Population Survey data.

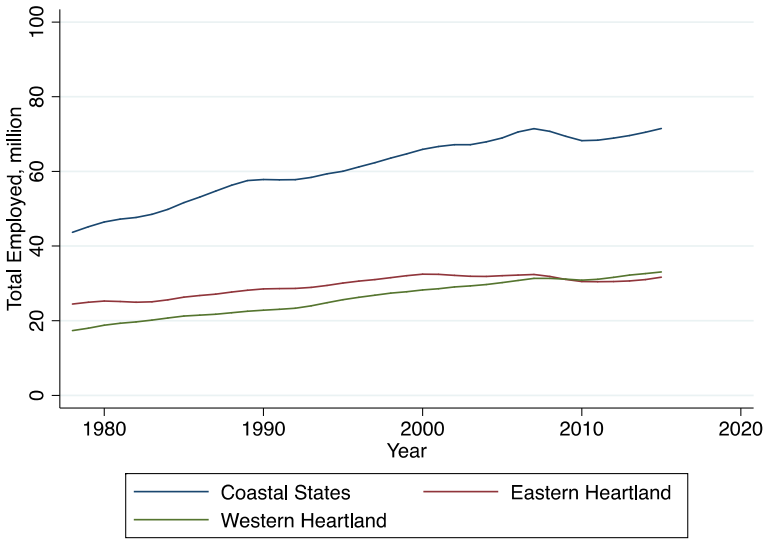

FIGURE 19. REGIONAL EMPLOYMENT GROWTH

Notes: Total working adults 18-64 from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing employment data. Working Population measured using three year rolling averages using ASEC supplement survey weights.

Source: Authors' calculations using Integrated Public Use Microdata Series (IPUMS) Current Population Survey data.

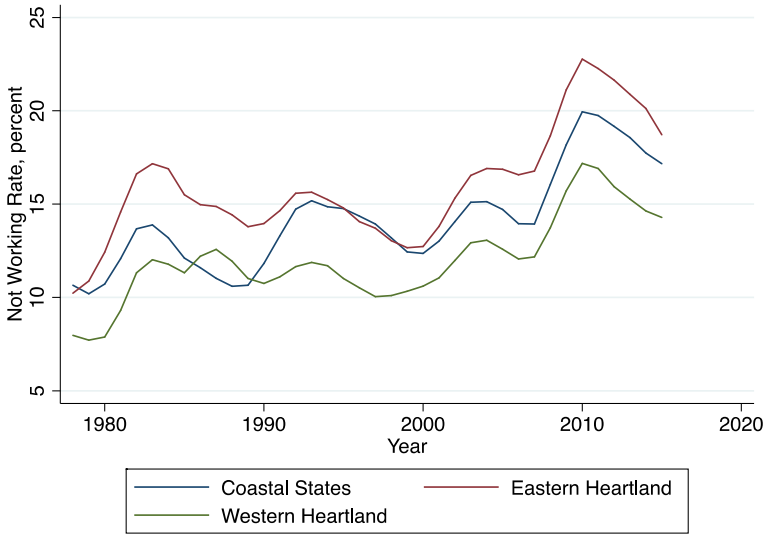

FIGURE 20. REGIONAL PRIME MALE NOT WORKING RATES

Notes: Three year rolling average using prime male respondents from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using Integrated Public Use Microdata Series (IPUMS) Current Population Survey data.

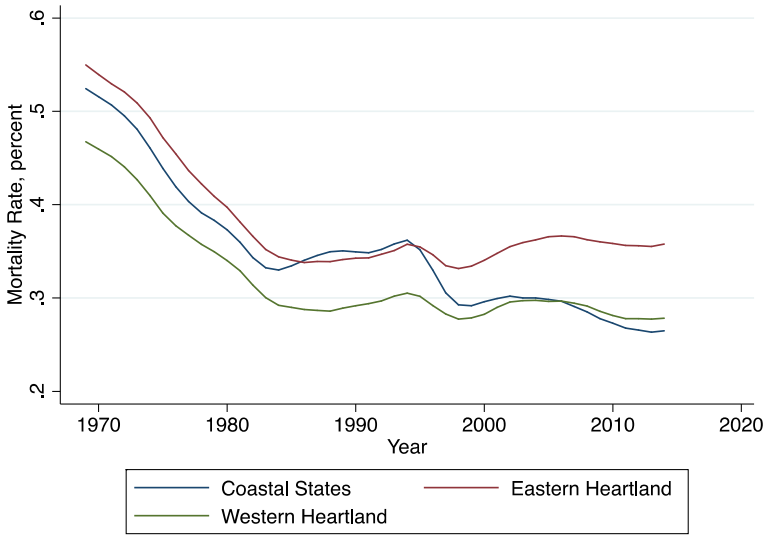

FIGURE 21. REGIONAL PRIME MALE MORTALITY

Notes: Three year rolling average mortality rate for prime-age men in the continental 48 states.

Source: Authors' calculations using Centers for Disease Control and Prevention WONDER data.

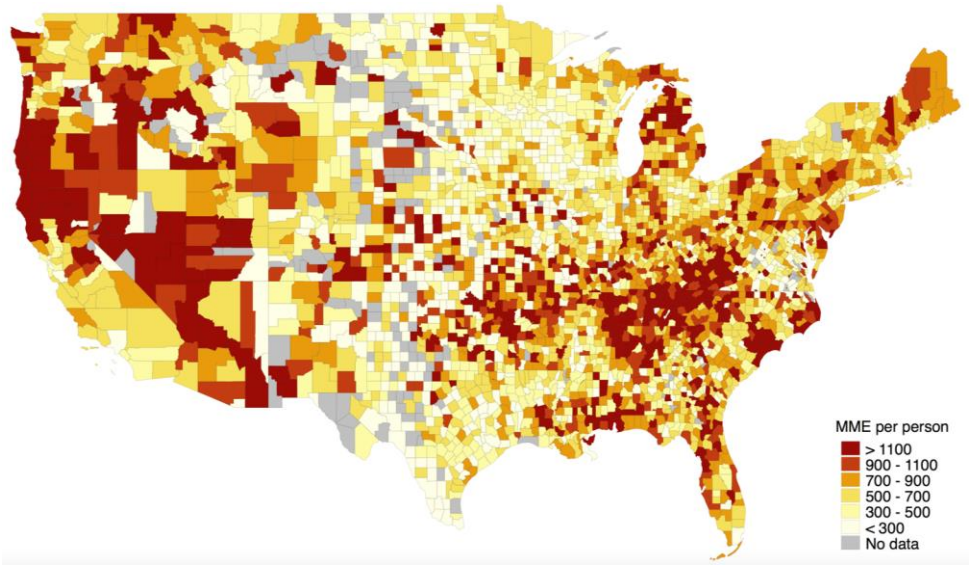

FIGURE 22. OPIOID CONSUMPTION

Notes: 2015 county level opioid prescriptions per capita in Morphine milligram equivalents.

Source: Centers for Disease Control and Prevention.

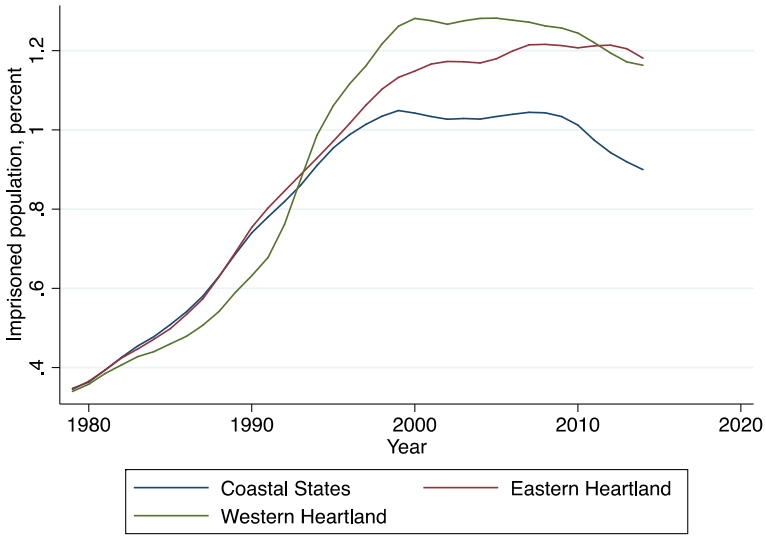

FIGURE 23. GROWTH IN MALE INCARCERATED POPULATION

Notes: 1978-2015 three year rolling average state inmate population to adult male population. Excludes Federal inmate population.

Source: Authors' calculations using Bureau of Justice Statistics data.

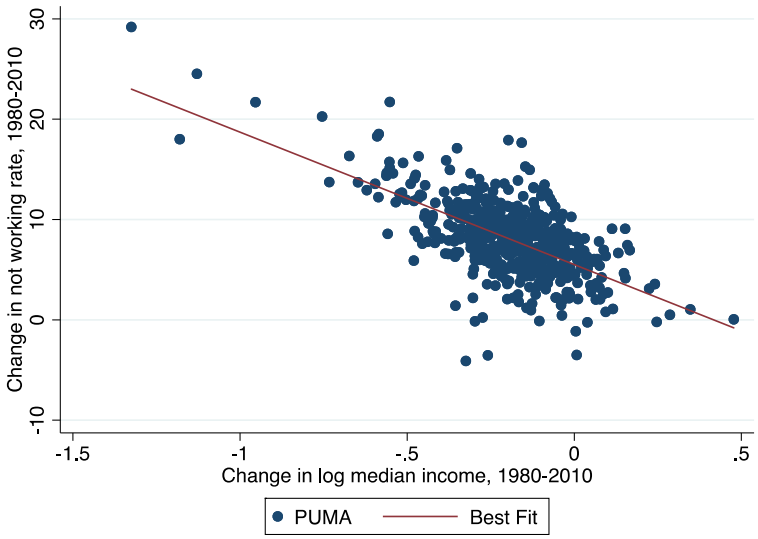

FIGURE 24. CHANGES IN NOT WORKING RATES AND MEDIAN NOMINAL INCOME GROWTH AT PUMA LEVEL, 1980-2010

Notes: Pooled 2009-2011 American Community Survey and 1980 Census prime male respondents, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Log median total personal incomes expressed in 2016 dollars using CPI. Log incomes and not working rates calculated for prime men at the Consistent Public Use Microdata Areas (PUMAs) using Census / ACS survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) American Community Survey and 1980 Census data.

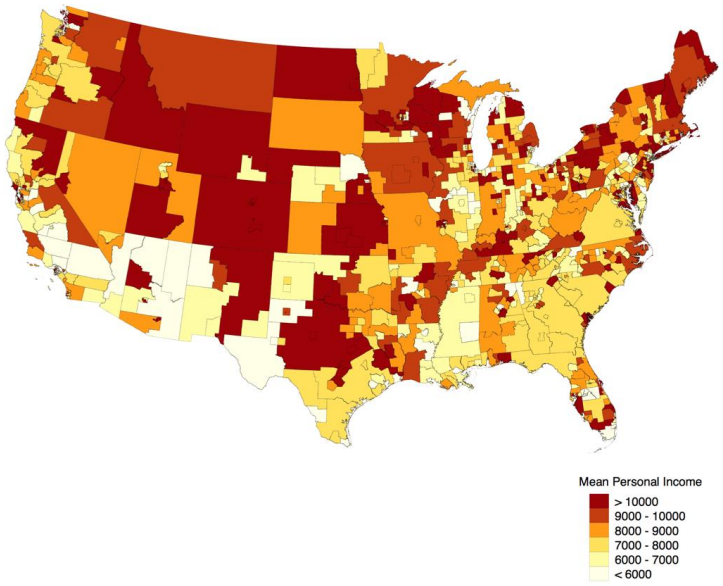

FIGURE 25. REPORTED INCOMES OF LONG-TERM NOT WORKING

Notes: Mean total personal income for men reporting they have not been employed in the past 12 months. Pooled 2014-2016 American Community Survey prime male respondents in the continental 48 states, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Rates calculated 2000-2010 Consistent Public Use Microdata Areas using ACS survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) American Community Survey data.

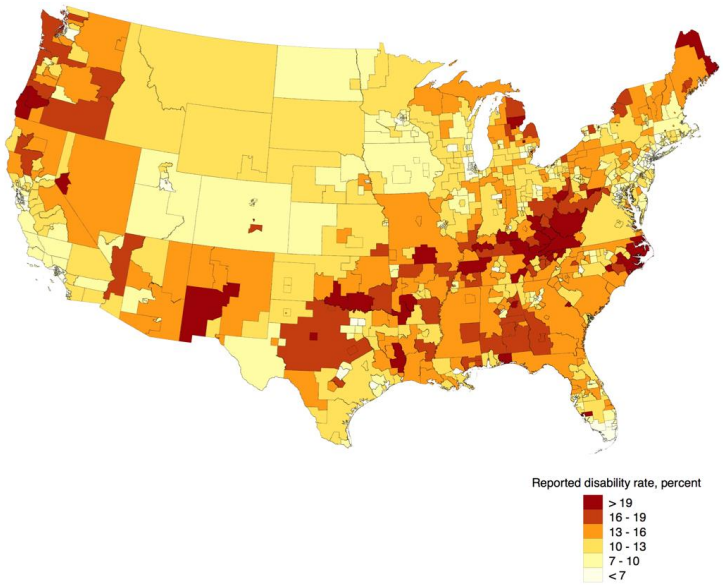

FIGURE 26. REPORTED DISABILITY RATE OF PRIME-AGED MEN

Notes: Share of men reporting a disability in any category. Pooled 2014-2016 American Community Survey prime male respondents in the continental 48 states, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Rates calculated 2000-2010 Consistent Public Use Microdata Areas using ACS survey weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) American Community Survey data.

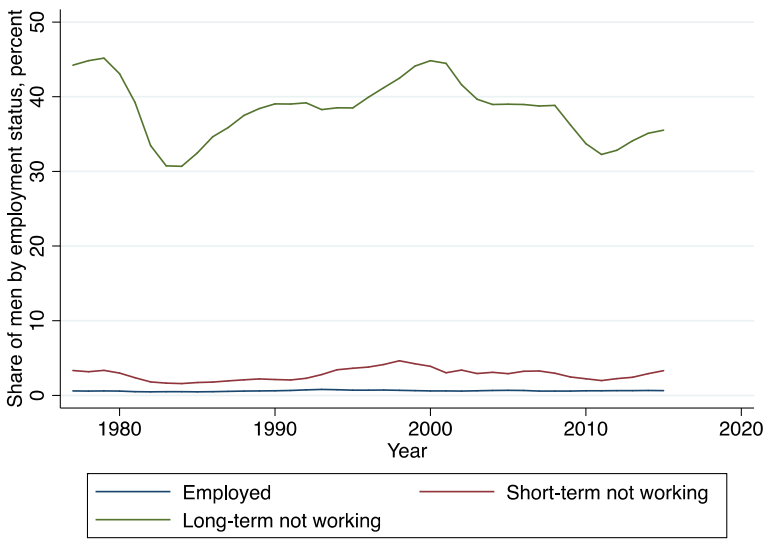

FIGURE 27. PRIME MEN REPORTING SSI OR SSDI BENEFITS

Notes: Three year rolling average share of prime-aged men reporting that they are receiving social security or Supplemental Security Income. Long-term not working defined as men reporting they have not been employed in the past 12 months. Data from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using Integrated Public Use Microdata Series (IPUMS) Current Population Survey data.

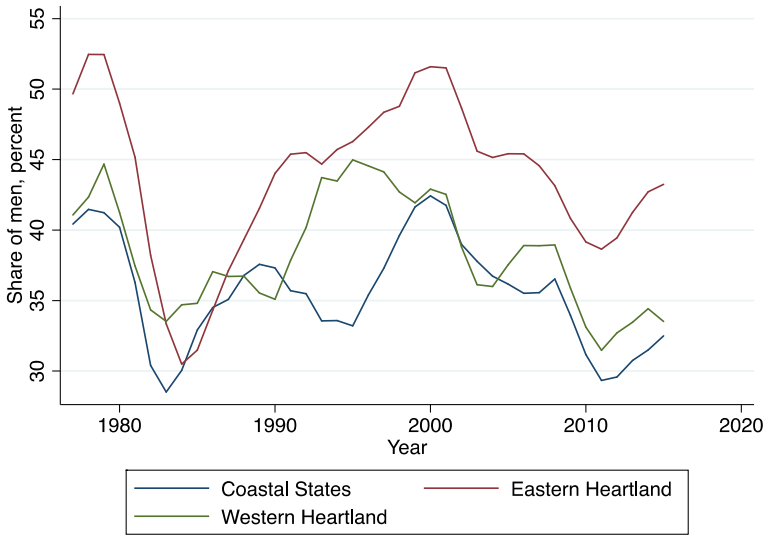

FIGURE 28. PRIME MEN REPORTING SSI OR SSDI BENEFITS BY REGION

Notes: Three year rolling average share of prime-aged men in the continental 48 states reporting that they are receiving social security or Supplemental Security Income. Data from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using Integrated Public Use Microdata Series (IPUMS) Current Population Survey data.

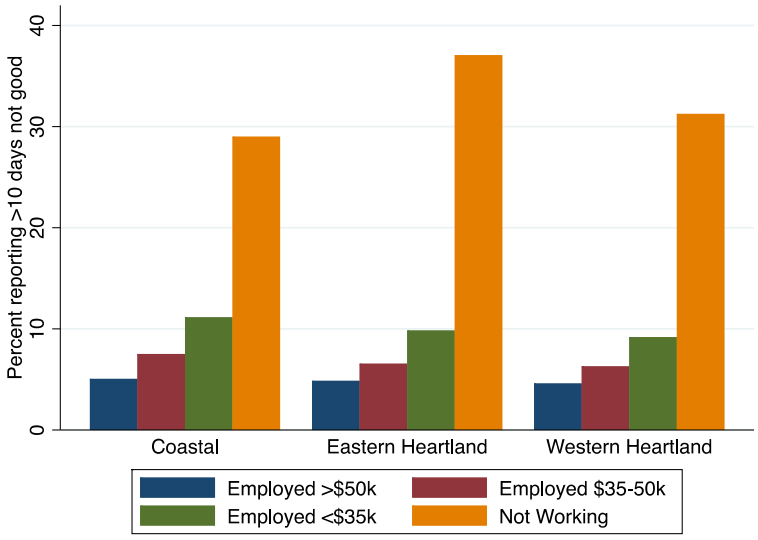

FIGURE 29. PHYSICAL HEALTH PROBLEMS

Notes: Share of prime-aged men in the continental 48 states reporting physical health issues on at least 10 days a month. Pooled 2011-2016 data from the Behavioral Risk Factor Surveillance System. Rates calculated using survey weights.

Source: Authors' calculations using Behavioral Risk Factor Surveillance System data from the Centers for Disease Control and Prevention.

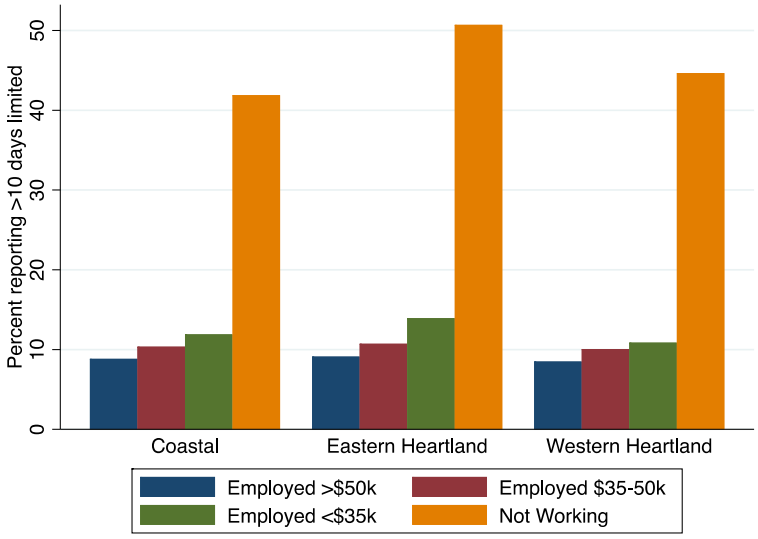

FIGURE 30. PHYSICAL ACTIVITY LIMITATIONS

Notes: Share of prime-aged men in the continental 48 states reporting physical activity limitations on at least 10 days a month. Pooled 2011-2016 data from the Behavioral Risk Factor Surveillance System. Rates calculated using survey weights.

Source: Authors' calculations using Behavioral Risk Factor Surveillance System data from the Centers for Disease Control and Prevention.

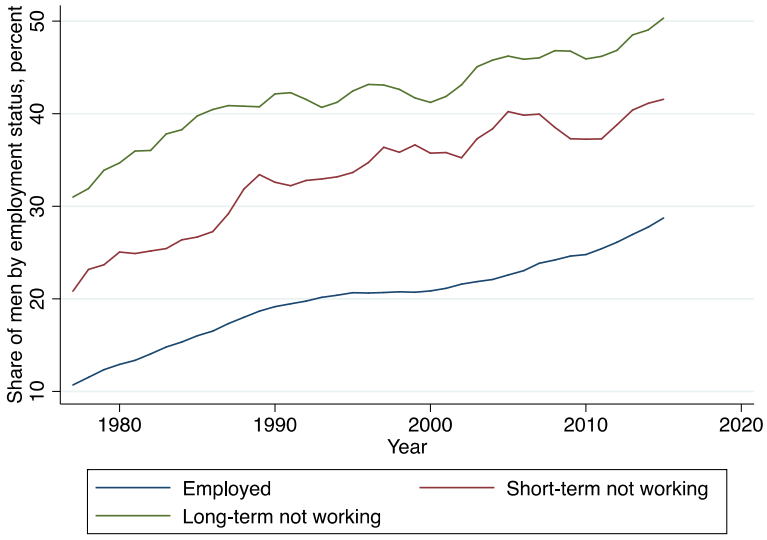

FIGURE 31. NEVER MARRIED RATES FOR PRIME-AGED MEN

Notes: Three year rolling average share of prime-aged men reporting that they have never been married by employment status. Long-term not working defined as men reporting they have not been employed in the past 12 months. Data from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using Integrated Public Use Microdata Series (IPUMS) Current Population Survey data.

FIGURE 32. SEPARATION AND DIVORCE RATES FOR PRIME-AGED MEN

Notes: Three year rolling average share of prime-aged men reporting that they are separated or divorced by employment status. Long-term not working defined as men reporting they have not been employed in the past 12 months. Data from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using Integrated Public Use Microdata Series (IPUMS) Current Population Survey data.

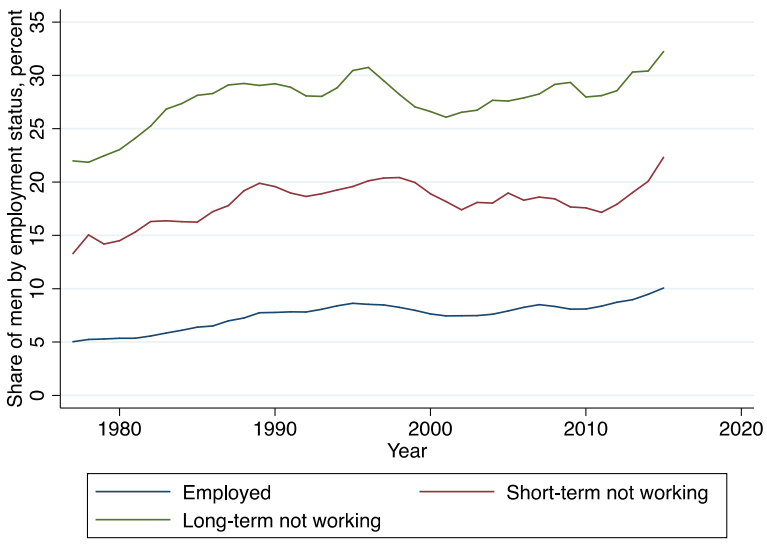

FIGURE 33. PRIME MEN LIVING WITH A PARENT

Notes: Three year rolling average share of prime-aged men reporting that they are living with a parent. Long-term not working defined as men reporting they have not been employed in the past 12 months. Data from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using Integrated Public Use Microdata Series (IPUMS) Current Population Survey data.

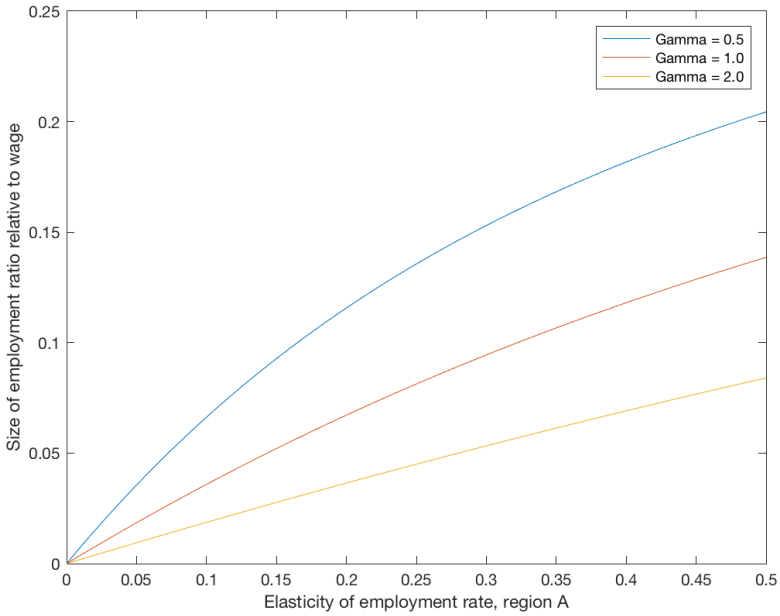

FIGURE 34. MODEL CALIBRATION FOR EMPLOYMENT SUBSIDY

Source: Authors' calculations.

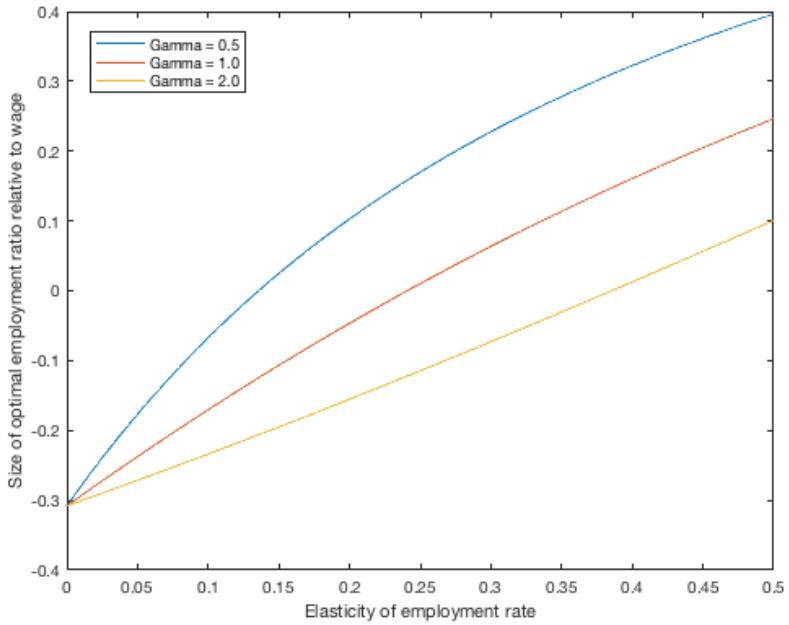

FIGURE 35. MODEL CALIBRATION FOR REVENUE NEUTRAL EMPLOYMENT SUBSIDY

Source: Authors' calculations.

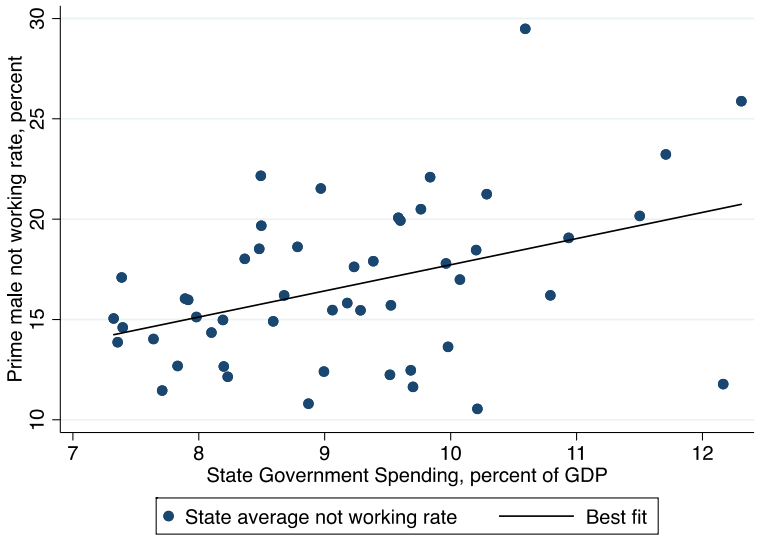

FIGURE 36. NOT WORKING RATES BY STATE GOVERNMENT EXPENDITURE

Notes: Correlation between three year rolling average not working rate in 2015 for of prime-aged men by state and three year average state and local government spending as fraction of state GDP. Data from the Annual Social and Economic Supplement (ASEC), excluding members of the Armed Forces and respondents with missing data and U.S. Bureau of Economic Analysis. Rates calculated using ASEC supplement survey weights.

Source: Authors' calculations using U.S. Bureau of Economic Analysis state GDP and Integrated Public Use Microdata Series (IPUMS) Current Population Survey data.

TABLE 1—GEOGRAPHIC PREDICTORS OF NOT WORKING AND INCOME

	Dependent Variable: 2010 not working rate			Dependent Variable: 2010 median income		
	(1)	(2)	(3)	(4)	(5)	(6)
Education levels						
1980 College Education Rate	-0.121 ***	-0.061 *	-0.057 *	37941 ***	39746 ***	40576 ***
	(0.033)	(0.033)	(0.031)	(4537)	(4588)	(4550)
1980 Less than High School Education Rate	0.311 ***	0.418 ***	0.443 ***	-31324 ***	-37179 ***	-33959 ***
	(0.036)	(0.036)	(0.036)	(4920)	(5078)	(5286)
Manufacturing share of employment						
1980 Durable manufacturing share of employment		0.077 ***	0.088 ***		8611 ***	5078 *
		(0.019)	(0.019)		(2601)	(2800)
1980 Nondurable manufacturing share of employment		-0.262 ***	-0.217 ***		29799 ***	27791 ***
		(0.038)	(0.036)		(5329)	(5322)
Climate						
Average winter temperature			0.003 ***			-168 ***
			(0.000)			(47)
Average summer temperature			-0.006 ***			187 *
			(0.000)			(99)
R^2	0.336	0.412	0.484	0.417	0.456	0.471
Observations	541	541	541	542	541	541

Notes: Prime male respondents in the United States, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data from 1980 Census and pooled 2009 - 2011 American Community Survey. College education rates are calculated using the fractions of men completing four or more years of college, and less than high school for men reporting 11 or fewer years of education. Industry shares are calculated for all men reporting the industry they currently or were recently employed in. Median incomes are calculated using reported total personal income. Values are calculated using a weighted mean at the consistent 1980-2000 Public Use Microdata Area level using Census / ACS sample weights. Average seasonal temperatures are recorded at the state level from 1971-2000 and exclude the District of Columbia. Standard errors are reported in parentheses.

Source: Authors' regressions using the Integrated Public Use Microdata Series (IPUMS) Census and American Community Survey, and National Oceanic and Atmospheric Administration data.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 2—PROBABILITY OF NOT WORKING FOR PRIME-AGED MALES

	Dependent Variable: Probability of Not working			
	(1)	(2)	(3)	(4)
Region Fixed Effects				
Eastern Heartland	0.019 **	0.009	0.005	0.008
	(0.007)	(0.006)	(0.006)	(0.006)
Western Heartland	-0.026 ***	-0.032 ***	-0.032 ***	-0.036 ***
	(0.006)	(0.006)	(0.006)	(0.005)
Education				
High School		-0.111 ***	-0.111 ***	-0.111 ***
		(0.018)	(0.018)	(0.018)
Some College		-0.176 ***	-0.175 ***	-0.175 ***
		(0.020)	(0.020)	(0.020)
College		-0.255 ***	-0.251 ***	-0.251 ***
		(0.020)	(0.020)	(0.020)
Local area characteristics				
Share of College Education Men in 1980			-0.086 ***	-0.089 ***
			(0.014)	(0.015)
Institutional Factors				
Corruption Variable				-0.048 **
				(0.021)
Right-to-Work Variable				0.000
				(0.004)
Percentage of Workforce Licensed				0.115 **
				(0.047)
Observations	1,635,830	1,635,830	1,635,830	1,635,830

Notes: Pooled 2009 - 2011 American Community Survey prime male respondents for the continental 48 states, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Education shares are calculated using a weighted mean at the consistent 1980-2000 Public Use Microdata Area level. Corruption is measured using average annual corruption convictions per 100,000 residents. Robust standard errors are in parentheses and are clustered at state and year level.

Source: Authors' regressions using the Integrated Public Use Microdata Series (IPUMS) American Community Survey.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 3—PROBABILITY OF NOT WORKING FOR PRIME-AGED MALES

	Dependent Variable: Probability of Not working			
	1980	1990	2000	2010
Region Fixed Effects				
Eastern Heartland	0.003 ***	0.001 ***	-0.018 ***	0.008
	(0.000)	(0.000)	(0.000)	(0.006)
Western Heartland	-0.015 ***	0.004 ***	-0.017 ***	-0.036 ***
	(0.000)	(0.000)	(0.000)	(0.005)
Education				
High School	-0.089 ***	-0.123 ***	-0.147 ***	-0.111 ***
	(0.000)	(0.000)	(0.000)	(0.018)
Some College	-0.100 ***	-0.159 ***	-0.203 ***	-0.175 ***
	(0.000)	(0.000)	(0.000)	(0.020)
College	-0.137 ***	-0.196 ***	-0.252 ***	-0.251 ***
	(0.000)	(0.000)	(0.000)	(0.020)
Local area characteristics				
Share of College Education Men in 1980	-0.104 ***	-0.073 ***	-0.051 ***	-0.089 ***
	(0.000)	(0.000)	(0.000)	(0.015)
Institutional Factors				
Corruption Variable	-0.009 ***	0.035 ***	0.055 ***	-0.048 **
	(0.000)	(0.000)	(0.000)	(0.021)
Right-to-Work Variable	-0.020 ***	-0.019 ***	-0.012 ***	0.000
	(0.000)	(0.000)	(0.000)	(0.004)
Percentage of Workforce Licensed	0.104 ***	0.151 ***	0.193 ***	0.115 **
	(0.000)	(0.000)	(0.000)	(0.047)
Observations	1,973,645	2,431,340	2,807,910	1,635,830

Notes: Prime male respondents for the continental 48 states, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data from 1980, 1990, 2000 Census and pooled 2009 - 2011 American Community Survey. IPUMS notes there are issues in the measurement of employment in the 2000 Census so caution should be used in interpreting results. Education shares are calculated using a weighted mean at the consistent 1980-2000 Public Use Microdata Area level. Corruption is measured using average annual corruption convictions per 100,000 residents. Robust standard errors are in parentheses and are clustered at state and year level.

Source: Authors' regressions using the Integrated Public Use Microdata Series (IPUMS) Census and American Community Survey.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 4—STATE LEVEL BARTIK ANALYSIS

	Dependent Variable: Growth in state not working rate				Dependent Variable: Growth in house price index	
	(1)	(2)	(3)	(4)	(5)	(6)
Bartik Employment Growth	-0.667 ***	-0.433 ***	0.196	0.451 **	0.318	-0.158
	(0.034)	(0.104)	(0.149)	(0.209)	(0.440)	(0.502)
Not working rate 1977	-0.013 ***	0.015	0.010 **	0.040 ***	-0.031 **	-0.083 **
	(0.001)	(0.013)	(0.004)	(0.015)	(0.012)	(0.034)
Bartik Growth * Not working rate 1977		-2.171 **		-2.251 **		4.248
		(0.995)		(1.066)		(2.787)
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	No	No	No	No
Year fixed effects	No	No	Yes	Yes	Yes	Yes
Observations	1,872	1,872	1,872	1,872	1,584	1,584

Notes: 1977-2016 Annual Social and Economic Supplement (ASEC) prime male respondents for the continental 48 states, excludes members of the Armed Forces, and individuals with missing data. Not working rates are calculated using ASEC supplement rates. Bartik growth shocks are calculated based on predicted growth in employment based on 1977 industry shares and national industry employment growth rates for all workers. Growth in house price index calculated by averaging quarterly all-transaction index from 1984-2016. Robust standard errors are in parentheses and are clustered at the state level.

Source: Authors' regressions using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey and Federal Housing Finance Agency data.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 5—PUMA LEVEL ANNUAL CHANGE BARTIK ANALYSIS

	Dependent Variable: Change in not working rate		Dependent Variable: Real income growth	
	(1)	(2)	(3)	(4)
One year Bartik Employment Growth	-0.806 ***	-0.475 ***	1.224 ***	0.863 **
	(0.149)	(0.146)	(0.305)	(0.340)
Not working rate rate 2005	-0.022 ***	0.004	0.063 ***	0.035 *
	(0.006)	(0.007)	(0.020)	(0.021)
Bartik x Not working rate 2005		-2.335 ***		2.543 **
		(0.385)		(1.018)
College education rate 2005	-0.005 ***	-0.005 ***	0.024 **	0.023
	(0.002)	(0.002)	(0.010)	(0.010)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	11,693	11,693	11,693	11,693

Notes: Pooled 2006-2016 American Community Survey (ACS) prime male respondents for the continental 48 states, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Not working rates are calculated using a weighted mean at the consistent 2000-2010 Public Use Microdata Area (PUMA) level. Change in not working rate is one-year percentage point change in the rate. Median real total incomes are calculated at PUMA level and expressed in 2016 dollars using CPI. Real income growth is one-year percentage change in real total personal income. Bartik growth shocks are calculated based on predicted growth in employment using PUMA industry shares in 2005 and national industry employment growth rates for all workers using ACS data. Robust standard errors are in parentheses and are clustered at state level.

Source: Authors' regressions using the Integrated Public Use Microdata Series (IPUMS) American Community Survey.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 6—IMPACT OF CHINESE IMPORT SHOCKS 1990-2007 EXTENDING AUTOR, DORN, AND HANSON 2013

	Dependent Variable: Change in not working rate		Dependent Variable: Change in long-term not working	
	(1)	(2)	(3)	(4)
Change in trade exposure	0.832 ***		0.373 ***	
	(0.172)		(0.093)	
Change in trade exposure baseline zones: β_l		0.825 ***		0.369 ***
		(0.173)		(0.094)
Change in trade exposure high not working rate zones: : $(\beta_h - \beta_l)$		0.601 *		0.341 *
		(0.318)		(0.191)
Percentage total employment in manufacturing t-1	-0.068 **	-0.066 **	-0.014	-0.013
	(0.028)	(0.028)	(0.014)	(0.014)
Percentage of college educated population t-1	-0.031	-0.026	-0.010	-0.007
	(0.030)	(0.029)	(0.014)	(0.014)
Percentage of foreign born population t-1	-0.108 ***	-0.106 ***	-0.051 ***	-0.050 ***
	(0.024)	(0.024)	(0.011)	(0.011)
Percentage of employment among women t-1	0.192 **	0.199 **	0.002	0.006
	(0.090)	(0.092)	(0.002)	(0.031)
Percentage employment in routine occupations t-1	0.215 **	0.223 **	0.043	0.048
	(0.095)	(0.095)	(0.050)	(0.050)
Average offshorability index of occupations t-1	-1.141 *	-1.204 *	-0.187	-0.222
	(0.661)	(0.662)	(0.270)	(0.269)
Census Region Fixed Effects	Yes	Yes	Yes	Yes
Period Fixed Effects	Yes	Yes	Yes	Yes
Observations	1,444	1,444	1,444	1,444

Notes: Pooled 2006-2008 American Community Survey and 1990 and 2000 Census prime male respondents, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Not working rates are calculated using a weighted mean at the commuting zone level. High not working commuting zones are zones in the top 10 percent of total prime male not working rate levels in 1990. Change in trade exposure and controls at the Commuting Zone level are for the entire working population, and are drawn from Autor, Dorn, and Hanson (2013). Commuting zones are weighted as in Autor, Dorn and Hanson (2013). Robust standard errors are in parentheses and are clustered at the state level.

Source: Authors' regressions using the Integrated Public Use Microdata Series (IPUMS) American Community Survey and Census data, and data from Autor, Dorn, and Hanson (2013).

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 7—IMPACT OF GOVERNMENT SPENDING SHOCKS EXTENDING NAKAMURA STEINSSON (2014)

	Dependent Variable: 1 year percentage change in prime male not working rate		Dependent Variable: 2 year percentage change in prime male not working rate		Dependent Variable: 3 year percentage change in prime male not working rate	
	(1)	(2)	(3)	(4)	(5)	(6)
Prime military contract spending per capita	-6.218 (4.587)		-6.370 * (3.578)		-9.613 ** (4.153)	
Prime military contract spending per capita in low not working rate states: β_l		-5.725 (4.464)		-6.214 * (3.587)		-9.491 ** (4.168)
Prime military contract spending per capita in high not working rate states: $(\beta_h - \beta_l)$		-11.051 ** (4.900)		-1.553 (5.551)		-3.048 (5.181)
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,377	1,377	1,377	1,377	1,377	1,377

Notes: 1977-2006 Annual Social and Economic Supplement (ASEC) prime male respondents, excludes members of the Armed Forces, and individuals with missing data. Not working rates are calculated using ASEC supplement rates. High unemployment states defined as 75th percentile or above mean not working rate over the entire period. Percentage change in prime military contract spending per capita is instrumented for using national per capita spending as in Nakamura Steinsson (2014). Robust standard errors are in parentheses and are clustered at the state level.

Source: Authors' regressions using the Integrated Public Use Microdata Series (IPUMS) and data from Nakamura Steinsson (2014).

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 8—INCOME SOURCES OF PRIME-AGED MEN

	Employed		Not working	
	Total	Low Income	<12 months	>12 months
Total Family Income	92,839	24,480	59,965	37,399
Total Individual Income	63,369	21,408	33,206	8,858
Wage	57,579	18,904	27,177	0
Investment / Business	4,832	1,715	2,293	404
Retirement	200	23	364	892
Workers Compensation	38	27	145	291
Family transfers	33	44	108	197
Total Government support	615	672	3,025	6,968
Unemployment	260	367	2,055	1,068
Disability	98	133	415	4,873
Veterans benefits	120	37	138	558
Other	137	135	416	470
Other sources	72	24	94	106
Share of men	81.4%	19.5%	6.7%	11.9%

Notes: Pooled 2010 - 2015 prime male respondents, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data or negative total incomes from the Annual Social and Economic Supplement (ASEC). Low income men defined as employed men with total family income less than $40,000 per annum. Mean incomes weighted using sample weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

TABLE 9—INCOME SOURCES OF PRIME-AGED MEN OF THE LONG-TERM NOT WORKING

	Coastal	Eastern Heartland	Western Heartland
Total Family Income	39,465	34,286	35,928
Total Individual Income	8,573	9,375	8,959
Wage	0	0	0
Investment / Business	401	296	571
Retirement	809	894	1,123
Workers Compensation	340	240	221
Family transfers	204	160	237
Total Government support	6,691	7,724	6,699
Unemployment	1,221	849	966
Disability	4,505	5,814	4,578
Veterans benefits	478	597	727
Other	488	464	427
Other sources	129	61	109

Notes: Pooled 2010 - 2015 prime male respondents, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data or negative total incomes from the Annual Social and Economic Supplement (ASEC). Respondents are classified as long-term not working if they report no employment in prior 12 months. Mean incomes weighted using sample weights.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

TABLE 10—EXPENDITURES OF PRIME-AGED MEN

	Total Employed	Employed, living alone	Low income employed, living alone	Long-term not working, living alone
Pretax Household Income	98,401	55,100	22,100	12,823
Tax	15,351	9,784	1,893	608
Post-tax Household Income	83,042	45,310	20,205	12,213
Total Expenditure	64,572	42,301	27,226	20,456
Food	9,476	6,386	4,948	3,745
Housing	21,253	14,447	10,468	9,165
Apparel and services	1,273	692	417	324
Transportation	9,420	5,878	4,081	2,418
Personal care	351	166	123	66
Healthcare	3,923	2,018	1,218	1,031
Entertainment	2,902	1,961	1,097	948
Alcohol	720	782	502	188
Tobacco products	326	339	390	453
Other expenditure	14,928	9,633	3,981	2,118

Notes: Prime male respondents to the 2016 Consumer Expenditure Survey Interview section. Mean weighted incomes reported using survey population weights. Low income defined as men with household pretax income of less than $40,000 per annum.

Source: Authors' calculations using Bureau of Labor Statistics Consumer Expenditure Survey microdata.

TABLE 11—INCOME SOURCES OF PRIME-AGED MEN BY LIVING ARRANGEMENT

	Employed	Not working < 12 months		Not working >12 months	
	Total	Living alone	Living with others	Living alone	Living with others
Total Family Income	92,839	34,995	64,402	12,513	41,868
Total Individual Income	63,369	34,925	32,901	12,420	8,219
Wage	57,579	27,948	27,040	0	0
Investment / Business	4,832	2,226	2,305	698	351
Retirement	200	440	350	661	934
Workers Compensation	38	140	146	348	280
Family transfers	33	356	64	576	129
Total Government support	615	3,713	2,903	9,832	6,454
Unemployment	260	2,187	2,032	1,051	1,071
Disability	98	761	354	7,328	4,432
Veterans benefits	120	234	121	969	484
Other	137	531	396	485	467
Other sources	72	103	92	304	71
Share of men	81.4%	1.0%	5.7%	1.8%	10.1%

Notes: Pooled 2010 - 2015 prime male respondents, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data or negative total incomes from the Annual Social and Economic Supplement (ASEC). Respondents are classified as living alone if there are no other residents aged 18 or over in the household. Mean incomes weighted using sample weights.
Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) Current Population Survey.

TABLE 12—TIME USE OF EMPLOYED AND NOT WORKING MEN

	Employed			Not working		
	Coastal	Eastern Heartland	Western Heartland	Coastal	Eastern Heartland	Western Heartland
Personal Care	530	529	529	598	604	587
Household Activities	74	83	75	115	114	122
Food	76	73	76	67	62	62
Caring for others	41	42	41	56	51	53
Total Work	392	382	401	33	28	32
Search for work	1	1	1	21	16	21
Education	6	5	6	35	22	38
Leisure	257	262	248	450	481	449
Socializing	36	37	34	51	57	56
TV	137	142	133	258	303	269
Computer games	17	17	17	41	34	37
Observations	19,213	9,738	10,258	2,590	1,480	1,068

Notes: Pooled 2003 - 2016 American Time Use Survey microdata for prime-aged men in the continental 48 states, excluding members of the Armed Forces, and individuals with missing data. Weighted mean includes all respondents including those reporting zero time spent on activity.

Source: Authors' calculations using the Integrated Public Use Microdata Series (IPUMS) American Time Use Survey.

TABLE 13—ESTIMATING THE ELASTICITY OF LABOR SUPPLY

	Dependent Variable: Log employment / population					
	Full Sample				Lowest 10% not working rate PUMAs	Highest 10% not working rate PUMAs
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	OLS	IV	IV	IV
Log Wage	-0.016 (0.018)	-0.037 (0.061)	0.012 (0.015)	0.159 * (0.087)	0.024 (0.047)	0.572 *** (0.178)
Not working Rate 1980	-11.913 *** (1.697)	-18.547 *** (2.377)	-11.722 *** (1.499)	-24.851 *** (6.952)	-0.161 (0.227)	-0.475 (0.399)
Log Wage x Not working Rate 1980	1.090 *** (0.165)	1.758 *** (0.238)	1.087 *** (0.148)	2.462 *** (0.715)		
College Share 1980	0.009 (0.032)	0.027 (0.047)	0.028 (0.028)	0.100 (0.069)	-0.034 (0.054)	-0.284 ** (0.102)
Less than High School Share 1980	-0.111 ** (0.043)	-0.068 (0.057)	-0.135 *** (0.050)	0.123 (0.166)	-0.201 ** (0.089)	-0.280 *** (0.072)
Period fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	No	No	Yes	Yes	No	No
Observations	1,614	1,614	1,614	1,614	162	162

Notes: Pooled 2009-2011 American Community Survey and 1980, 1990, and 2000 Census prime male respondents for the continental 48 states, excludes institutionalized individuals, members of the Armed Forces, and individuals with missing data. Log 25th percentile real wages are calculated in 2016 dollars using national CPI for men reporting non-zero wages. Changes in log wages are instrumented using Bartik growth shocks, that are calculated based on predicted growth in employment using PUMA industry shares in 1980 and national industry employment growth rates for all workers using Census / ACS data. Employment / Population rates and log wages calculated for 1980-2000 Public Use Microdata Area (PUMA) level using sampling weights. Robust standard errors are in parentheses and are clustered at the state level.

Source: Authors' regressions using the Integrated Public Use Microdata Series (IPUMS) American Community Survey and Census.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.