

About the Authors

Michael J. Hicks, PhD, is director of Ball State CBER and the George & Frances Ball distinguished professor of economics in the Miller College of Business. His research interest is in state and local public finance and the effect of public policy on the location, composition, and size of economic activity. Hicks earned doctoral and master's degrees in economics from the University of Tennessee and a bachelor's degree in economics from Virginia Military Institute. He is a retired army reserve infantryman.

Dagney Faulk, PhD, is director of research at Ball State CBER. Her research focuses on state and local tax policy and regional economic development issues. She received her doctorate in economics from the Andrew Young School of Policy Studies at Georgia State University.

About Ball State CBER

The Center for Business and Economic Research (CBER) conducts timely economic policy research, analysis, and forecasting for a public audience. We share our insight with the community through the Indiana Economic Outlook and the Ball State Business Roundtable. The CBER Data Center offers primary data sets, data resources for grant writers & economic developers, and a projects & publications library at www.cberdata.org.

Center for Business and Economic Research
2000 W. University Ave. (WB 149)
Muncie, IN 47306
765-285-5926 • cber@bsu.edu
www.bsu.edu/cber • www.cberdata.org
facebook.com/BallStateCBER
twitter.com/BallStateCBER



What Comes First, People or Jobs: Evidence and Lessons for Indiana

Center for Business and Economic Research, Ball State University

- **Michael J. Hicks, PhD**, director, CBER
George & Frances Ball distinguished professor of economics, Miller College of Business
- **Dagney Faulk, PhD**, director of research, CBER

Tags: #Jobs #Indiana

Abstract

This paper evaluates the long standing question: Do people follow jobs, or do jobs follow people? To do so, we examined population and employment growth in Indiana's 92 counties in the decades of the 1970s and the 2000s. The study controlled for educational attainment, initial population, urban/rural influence, natural amenities, income inequality and inter-generational mobility, the size of local government and spatial spillover effects. Our findings are very consistent with the more than 25 studies performed on this issue, though we add both income and social mobility dynamics to the analysis. Moreover, this is the first study to examine long-term differences between the questions: Do jobs move to people or do people move to jobs? We found that in the 1970s both phenomena occurred; workers migrated to jobs, while jobs moved to workers, though the movement of jobs to people was at that time much larger. However, in our study of Indiana the 2000s we found that the movement of workers to jobs had ceased to play a statistically meaningful role in population dynamics, and that jobs relocated to be near people. The clear implication of this finding is that policies that focus on relocating capital investment, in order to move people to jobs, will be ineffective. In contrast, policies that effect the relocation of people to regions will also increase employment availability.

Introduction

An enduring public policy question surrounding economic development spending priorities is whether workers primarily move to be near jobs, or whether jobs (businesses) move to be near workers. The importance of this question can hardly be overstated. Traditional economic development policy focusing on business attraction assumes the former, while place based strategies that focus on education and amenities assume the latter effect dominates.

In this policy brief we address this question using Indiana county-level data. The goal is to better understand which effect dominates; the movement of people to jobs or jobs to people, and to isolate what additional factors might play a policy role in improving both employment and population growth rates in Indiana.

We begin by briefly reviewing the literature, which is followed by a model and empirical test of Indiana's counties in two time periods: the 1970s and the 2000s. We discuss these results and what they mean to those who develop and implement public policy regarding business attraction. We link this study to previous research and outline policy considerations for Indiana.

Existing Research

There exists a lengthy and significant body research examining regional population and employment dynamics, which may be of use to policy makers considering changes to state and local policies to influence growth.¹ Among the efforts to explain growth include a modeling effort by Carlino and Mills (1987), which spawned a lengthy body of research examining the link between county population and employment growth to underlying conditions within the region. This is the classic paper evaluating the chicken or egg problem of what comes first; people or jobs.

The Carlino and Mills study examined growth in roughly 3,000 US counties during the 1970s, crafting a simultaneous equation test of employment and population size. Their model included demographic, highway, fiscal, and regional variables along with 10 year



lagged variables to test for convergence of counties to similar levels of population and employment density.

The study reported modest impacts of fiscal conditions (tax rates and development bonds), which were swamped by such factors as interstate highways and a preference for sunbelt states. The authors did find that population growth exerted a greater pull on jobs than jobs did on population. The distinctiveness of this finding led them to offer the following recommendation:

“There is hope, however, for government and private planners in slow-growing and declining regions. Since population and employment growth are interrelated, one policy prescription for local economic development officials is to formulate strategies to retain or attract population and employment will follow. To the extent that income serves as a proxy for good neighborhoods and schools . . . public funds may be better spent on educating the resident population than used to lure employment.”

—Carlino and Mills, 1987 p. 52.

Follow up studies examined intra-regional population and employment levels (Boarnet, 1992, 1994); growth feedback between population and employment changes at the county level (Clark and Murphy, 1996); amenities such as state parks (Duffy-Deno, 1997); the relationship between rural and urban labor markets (Schmitt and Henry, 2000); and the impact of large discrete plant locations (Edmiston, 2003).

A 2005 study offered a meta-analysis of 37 separate studies from 1987 through 2003 (Hoogstra, Florax, and Dijk, 2005). These studies, including all of those mentioned above, were all of the related analysis then in print regarding the original questions posed by Carlino and Mills.² This study tested the results of these studies (300+ tested hypotheses and results) using a technique that tested the strength of each conclusion across all studies. A few findings are of particular importance to this research.

First, the strength of the findings with respect to time period, location, and degree of urban or rural characteristics impacted the influence of most variables on population and employment growth. The authors posit that this result may come from different methods used in the studies, or from differences in the size of the effect across counties, which may be of different population density. This is not surprising because some of the studies were more heavily focused on issues other than the “jobs follow people, or people follow jobs” hypothesis directly. This finding suggests that evaluation of fiscal variables, urban and rural interactions and amenities might require more location specific analysis, such as a single state or census region such as the Great Lakes area.

One important and strong result, which held in all but one of the studies, was that the forces that pulled jobs to populations was stronger than that which pulled population to employment. The

1. See Cannan (1895), Verhulst (1845), Rossiter (1890).

2. Edmiston (2004) was a primary draft in the Hoogstra, *et al.* analysis, and was later published as Edmiston (2004).

overwhelming evidence from this body of research is that while both effects occur, the tendency for population growth to lead to job growth is far stronger than the impact of job growth on population. Hoogstra, Florax, and Dijk (2005) conclude that their meta-analysis and existing research all support the “jobs follow people” hypothesis, which should be of significant importance to policymakers.

In the decade that has passed since this meta-analysis, additional research has largely confirmed this result (see Krishnapallai, Kinnuan and Leonard, 2014). Other studies have attempted to explain why the “jobs follow people” effect is more likely in recent decades (Hicks, 2014), while others have offered policy guidance for regions seeking to attract people (Jackson, 2015; Weinstein and Partridge, 2015).

Despite repeated support for the finding that “jobs follow people” among published research studies, local economic development policy is predicated on the idea that it is largely driven by the movement of people to jobs, rather than jobs to people. This manifests itself in local economic development policies and both public and private spending at the county and municipal level.

To further investigate this issue in Indiana, we propose an extension of the Carlino and Mills study to Indiana, focusing primarily on the question: Do jobs follow people, or do people follow jobs?

This Study

This policy brief examines population growth and employment growth following the Carlino and Mills (1987) framework, with a focus on two different time periods: the 1970s and the 2000s. Focusing on Indiana’s 92 counties, we model changes in population and employment in each of these decades, using the degree of rural influence, human capital, fixed amenities, income inequality and mobility and size of the local public sector as explanations for growth differentials. We focus on Indiana because there is some evidence from earlier studies (Greenwood and Hunt, 1984) that regional heterogeneity may lead to different results, and we are using this paper to speak to Indiana policy. We test the impact employment growth has on population growth and the effect population growth has on employment using a simultaneous equations approach. The data appear in *Table 1*.

To model these relationships, we follow the general outline of Carlino and Mills (1987) with the growth model of Clark and Murphy (1996) as the method of analysis. In these models we solve simultaneously the effect of employment on population and population on employment, considering also spatial growth, rurality, human capital, amenities, income inequality, mobility, and the relative size of local government. Through this model we examine

Table 1. Summary Statistics

Source: As listed.

	Mean	Median	Maximum	Minimum	Standard Deviation.	Source
Population 1970	56,471	26,969	793,769	4,289	104,508.3	Census
Population growth 2000-2010 (%)	0.015	0.009	0.1796	-0.042	0.035	Census
Population growth 1970-1980 (%)	0.109	0.093	0.506	-0.097	0.116	Census
Employment growth 2000-2010 (%)	-0.023	-0.036	0.202	-0.167	0.061	BLS
Employment growth 1970-1980 (%)	0.182	0.137	0.995	-0.201	0.188	BLS
Rural Urban influence code 1983	4.909	6	9	0	2.322	USDA
Rural urban influence code 2013	3.966	4	8	1	2.336	USDA
BA attainment 1970 (%)	6.269	5.6	20.6	3.1	2.515	Census
BA attainment 2010 (%)	17.308	16	55.1	8.5	7.195	Census
AMENITY Index	-2.330	-2.445	-0.19	-5.4	1.144	USDA
GINI Coefficient 1980	33.304	33.4	37.18	29.04	1.575	Census
GINI Coefficient 2010	33.608	32.2	51.5	22.6	6.063	Census
Intergenerational mobility index	42.461	42.45	52.7	35	3.383	Chetty, et Al. 2014
Local government employment 1980	2,275.705	1,143.5	30,875	172	4,067.201	BEA REIS
Local government employment 2010	3,047.205	1,657.5	36,643	301	4,818.037	BEA REIS
Total employment 1980	28,938.92	13,392.5	502,139	1,183	61,892.08	BEA REIS
Total employment 2010	38,658.26	16,312.5	642,897	2,400	78,454.4	BEA REIS

whether population growth or employment growth are the dominant “pull” factors in a county. Does a growing population attract job growth or does job growth via business locations or expansions attract population growth? Because we focus on a single state we can ignore such factors as climate and state tax differences in our empirics.

We focus on two different time periods to evaluate whether there has been some change in the impact of people on jobs, or jobs on people over this time period. Both Florida (2002) and Hicks (2014) argue for changes that would likely shift the impact of these relationships between these decades. Florida’s analysis is rooted in a worker characteristic model, a labor supply framework, while Hicks argues the changes are due to changing demand for ‘footloose’ employees.

We use employment and population growth from the Census and Bureau of Labor Statistics. We use the 1983 and 2013 versions of the Rural Urban Influence codes as our measure of rural/urban conditions because these are the closest available to the end of each period. These data are estimated by the USDA.

Our human capital measures are the share of population within each county with a bachelor’s degree or equivalent in 1970 or 2000, respectively. We use another time invariant variable from the USDA to measure natural amenities, the Economic Research Service amenity values. For income inequality we use the GINI coefficient from 1980 and 2010 and for intergenerational mobility we use the absolute mobility values from Chetty, et. al., 2014. These values cover the 1970s through 2000s and do not vary across the two time periods, and measure the movement of individual incomes across quintiles from parent to child.

We use a fixed intercept and stochastic error term to account for other effects that will not be directly interpreted.

There are also some econometric considerations in this modeling effort. This study is of the 92 Indiana counties so the effects of broader regional influences are a virtual certainty. This concern for spatial autocorrelation requires us to include a spatially weighted dependent variable in each model.

Finally, we include a variable to test for conditional convergence in population across the sample. This will be the 1970 population levels, which we use in each time period to examine the longer term effect of conditional convergence.

The basic model we propose takes the form: $\mathbf{Y} = \mathbf{XB} + \widetilde{\mathbf{WY}} + \mathbf{e}$, where \mathbf{Y} is the dependent variable matrix (employment or population growth in the two time periods), \mathbf{X} the explanatory variables and \mathbf{W} the first order contiguity matrix, which is deployed to calculate the population weighted average of each dependent variable’s value in adjacent counties. This is a spatial autoregressive adjustment. For simultaneity, the models are solved first on a reduced 2SLS, with the corrected values comprising the dependent variable in the second stage.

The models were estimated both with OLS and GLM, assuming a normally distributed link function. The results were nearly identical,

with a Wald test rejecting coefficient differences among those variables that were statistically significant. We report the GLM results in *Table 2*.

In general these models of Indiana’s economy confirm the basic results from the Carlino and Mills family of studies. By isolating this analysis to a single state we focus on local fiscal differences and omit the climate variation data used in the original Carlino and Mills study. We have extended the research to examine the role of income inequality and intergenerational mobility over the study period. In keeping with our analysis of two different time periods we have included a test of convergence in the population regressions.

The findings of these models point to important features of the Indiana economy and have broad policy implications. First, it is clear that Hoosier counties are experiencing slow conditional convergence in population. That is, when we control for the level of urbanization, income inequality, educational attainment and local government cost, counties that were smaller in 1970 grew faster than those that were larger, but only after a very long lag that is not detected in the one decade estimation in the first time period. This is conditional convergence, not absolute convergence, because

Table 2. Estimation Results (GLM)

	Employment Growth		Population Growth	
	1970-1980	2000-2010	1970-1980	2000-2010
Intercept	-0.114 (-0.19)	-0.1227 (-0.44)	0.2871 (0.77)	-0.0433 (-0.62)
Population Growth	1.203*** (5.84)	0.9517* (1.94)	...	...
Employment Growth	...	...	0.4848*** (5.93)	0.0619 (0.64)
$\widetilde{\mathbf{WY}}$ (spatial values)	0.502*** (2.07)	0.1690 (0.46)	0.0576 (0.21)	0.5007* (1.79)
1970 Population level	...	...	-1.66E-07 (-1.08)	-1.17E-07** (-2.35)
Rural Urban Influence Code	-0.008 (-0.87)	0.0033 (0.60)	-0.0002 (-0.03)	-0.0028 (-1.25)
BA Attainment Rate	0.019*** (2.56)	0.00517** (2.08)	-0.0055 (-1.11)	0.0039*** (4.04)
Amenity INDEX	0.0018 (0.85)	0.0072 (0.64)	0.0200† (1.51)	0.0061† (1.52)
GINI Coefficient	-0.0116 (-0.81)	-0.1379 (-0.60)	-0.0036 (-0.40)	-0.0005 (-0.53)
Intergenerational Mobility	0.0093 (1.44)	-0.0003 (-0.07)	-0.0049 (-1.22)	0.0002 (0.13)
Local Gov’t Share of Employment	-0.1906 (-0.19)	0.4585 (0.93)	0.4414 (0.69)	-0.0917 (-0.46)
Akaike info criterion	-0.2841	-1.9643	-1.2039	-3.4552
Hannan-Quinn criterion	-0.1827	-1.8414	-1.0912	-3.3425
LR statistic	70.4231	34.9027	61.3219	73.5419
Pearson SSR	3.1864	0.3604	1.2402	0.1305

Note: t-statistics in parenthesis, *** denotes statistical significance at the 0.01 level, ** at the 0.05 level and * at the 0.10 level.



By the 2000s educational attainment was an important part of population growth, and had some of the strongest statistical significance in our study

we see urban areas becoming more dense and rural areas less so. What this conditional convergence means is that the factors noted above account for most of the population differences, and other unmeasured factors explain a declining share of population differences across Indiana counties. This implies that as long as education, amenity, and fiscal differences remain in Indiana counties, population will also remain dissimilar.

Education mattered for jobs in the 1970s and 2000s, but did not play a role in population change in the 1970s. There were some useful non-findings. Income inequality (measured by the GINI coefficient) did not play a statistically meaningful role in the movement of jobs or people in either the 1970s or 2000s, but the direction of impact was negative, implying that in a larger sample, including non-Indiana counties the connection may materialize. Our measure of intergenerational income mobility was also uncorrelated with growth. It is worth noting that studies of these factors link variables associated with educational attainment strongly to inequality and mobility (see Chetty, et al., 2014).

Amenities, which comprise a static measure over the past 50 years, played no role in job growth, but were correlated with population growth, albeit just outside the traditional levels of statistical significance. Many other studies suggest a robust role of amenities (e.g. Clark, et al. 2002; McGranahan, Wojan, and Lambert, 2010), and these results can be interpreted as supportive of those findings.

Urbanness seemed not to matter, which may be due to high correlation with the amenity measures. Indeed, if we omit either the rural urban influence code or the amenity index from the regression, the statistical significance of the remaining variable improves to acceptable levels. This suggests these measures are accounting for much of the same phenomenon.

There is spatial influence across the board, though it manifests itself in different ways. The spatial autocorrelation values are significant in the 1970s employment model and the 2000s population model. This suggests that growth in employment and population

has a more regional flavor to it in each of these periods. However, if we include broader jobs or population measures in the remaining regressions, the impact grows. The interpretation of this matters in our evaluation of the central research question: Do jobs follow people, or do people follow jobs?

In our two employment regressions we find in both periods that jobs follow people. Formally, growth in population leads to growth in employment in our simultaneous estimate. This result was actually very strong in the 1970s weakening both in magnitude and in statistical certainty in the 2000s.

In our population model, we find that people followed jobs in the 1970s, but that in the 2000s there was no statistically meaningful impact of job growth on population growth within Indiana counties. So, in the 1970s people followed jobs, but by the 2000s they had stopped.

The size of the effects, not merely the statistical significance, is important. It also repeats a fairly well understood relationship within the US economy that has yet to fully impact public policy and resource allocation. It is worth explaining how the impact manifested itself over the past half century, which can be done by calculating elasticities from the estimated values in this model.

In the 1970s a 1.0 percentage point increase in population growth would lead to a more than 1.0 percentage point increase in employment. This is consistent with the growth in labor force participation that occurred in that decade, and the observation in Hicks (2014) of the relative abundance of footloose jobs during that time period. By the 2000s the impact had shrunk dramatically. Translating these estimates into percentages allow some useful comparison; a 1.0 percent increase in population leading to less than a 1.0 percent increase in employment. Clearly, the businesses created jobs in response to population growth in the 1970s and the 2000s.

If we look at the impact of employment growth on county population, we see some similar trends. In the 1970s it would require roughly two new jobs to increase the population of a Hoosier county by one person. Clearly, people were moving to jobs, but as Carlino and Mills reported, the jobs to people phenomenon already dominated people to jobs effect in the U.S. by the 1970s. In our contemporary study of Indiana, the people to jobs effect disappeared by the 2000s. So, an increase in employment within a county had no statistical impact on the number of persons residing



in that county. This changing relationship was driven by a variety of factors which we are not able to measure including increases in the proportion of two-earner (and multi-car) families, which often necessitates at least one family member commuting long distances to their job.

It is worth restating this plainly. In the 1970s population growth had a strong influence on job growth in the typical county, and job growth also influenced population growth, but the effect was smaller. During the 2000s the effect of population growth on job growth was still present but had dissipated, while employment growth had no discernible statistical effect on population growth. Together these results suggest that the dominant force is that people attract jobs not that jobs attract people. This suggests that economic development policy should focus primarily on attracting people. There is some evidence that regional job growth, or the average growth of jobs across contiguous counties may have been correlated with population growth even in the 2000s (based on the significance of the population weight used in the statistical model).

These findings have important implications for state and local economic development policy in Indiana.

Summary and Policy Implications

This study examined directly the hypothesis first put forward by Carlino and Mills in 1987: Do jobs follow people or do people follow jobs? To do so we examined two decades of growth in Indiana's counties, accounting for urbanization, the joint impact of spatial influences, initial economic conditions, the coincident growth in employment or population, educational attainment, the degree of urban influence, amenities, local government cost, income inequality and intergenerational mobility. We find the unsurprising result that regional effects, educational attainment and amenities matter to population growth, and less to employment growth. The results could hardly be clearer.

In the 1970s jobs followed people and people followed jobs. This was what Carlino and Mills, and almost all other scholars have found. Our results using data for Indiana counties confirm this result. By the 2000s the movement of jobs to people had a more modest impact on local populations than it did in the 1970s, likely reflecting the growth other factors in employment migration. However, the impact of jobs on the growth of population vanished. By the 2000s population growth within a county was no longer dependent upon job growth within the county, but on other factors such as education. We can convincingly reject the notion that in the 21st century job growth leads to more people living within a county in Indiana. This has policy implications.

Traditional economic development as practiced at the county level in Indiana, is largely focused on attracting employment growth.

This may manifest itself in policies designed to lure new employers, or to boost investment, but in most cases the roughly \$1.5 billion spent by local governments on traditional business attraction, such as property tax abatement, in Indiana focuses on policies that do not contribute to population growth within counties. Of Indiana's 92 counties, 22 (or 23 percent) have lost population since the 1960s, and only two counties (Hamilton and Hendricks) have seen growth faster than the nation as a whole. Population growth is appropriately viewed as the single most important measure of regional economic growth in developed nations, and these data suggest Indiana has faced a daunting half century.

The only important caveat to this robust finding is that there is some evidence that regional employment growth may impact population growth within a county. We will explore this issue in more detail in future analysis, but at the very least these findings should cast doubt on much of the current practice of local economic development in Indiana.

As early as the 1970s economic development in Indiana focused on the less important aspect of luring employment opportunities to communities in order to bolster population. That policy could be viewed as appropriate in the last few decades if accompanied by larger investments which boosted human capital and quality of place in communities. However, by the beginning of the 21st century, these policies no longer had meaningful impact on communities, regardless of their purported success. In today's mobile economy, attracting jobs does not attract people to a county, and through the last decade and a half, business attraction efforts have been uncorrelated with economic growth in regions.

Over the past decade and a half, the most successful places in Indiana have done the least business attraction, focusing instead on improvements to quality of place and education. This research suggests that these policies should be widely mimicked throughout the state. Indeed, this analysis suggests that business attraction does not grow communities at the county or sub county level, though at the appropriate regional level, business attraction may be a useful policy adjunct.

There is evidence that the largest urban regions have greatly reduced their direct business attraction efforts. Moreover, state public policy acknowledges the findings of this, and the long body of research which precedes it. However, at the county and municipal level, resources on attracting jobs continue to be diverted from policies and investments that will have a bigger impact in attracting population growth to Indiana's counties. ■

Credits

References

- Boarnet, Marlon Gary. (1992) "Intra-Metropolitan Growth Patterns the Nature and Causes of Population and Employment Changes Within an Urban Area." Transportation Research Board.
- Boarnet, Marlon G. (1994) "The monocentric model and employment location." *Journal of Urban Economics* 36, 1, 79-97.
- Cannan, Edwin. (1895) "The probability of a cessation of the growth of population in England and Wales during the next century." *The Economic Journal* 5, 20, 505-515.
- Carlino, Gerald A., and Edwin S. Mills. (1987) "The Determinants of County Growth." *Journal of Regional Science* 27, 1, 39-54.
- Chetty, Raj, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez. (2014) Where is the land of opportunity? The geography of intergenerational mobility in the United States. No. w19843. National Bureau of Economic Research.
- Clark, David E., and Christopher A. Murphy. (1996) "County-wide Employment and Population Growth: An Analysis Of The 1980s*." *Journal of Regional Science* 36, 2, 235-256.
- Clark, Terry Nichols, Richard Lloyd, Kenneth K. Wong, and Pushpam Jain. (2002) "Amenities drive urban growth." *Journal of urban affairs* 24, 5, 493-515.
- Duffy-Deno, Kevin T. (1997) "The effect of state parks on the country economies of the West." *Journal of Leisure Research* 29, 2, 201.
- Edmiston, Kelly D. (2004) "The Net Effects of Large Plant Locations and Expansions on County Employment*." *Journal of Regional Science* 44, 2, 289-320.
- Florida, Richard L. (2002) *The Rise of the Creative Class: and How it's Transforming Work, Leisure, Community and Everyday Life*. Basic books.
- Greenwood, Michael J., and Gary L. Hunt. (1984) "Migration and interregional employment redistribution in the United States." *The American Economic Review*: 957-969.
- Hicks, Michael J. "Why Tax Incentives Don't Work: The Altered Landscape of Local Economic Development."
- Hoogstra, Gerke J., R. J. G. M. Florax, and Jouke van Dijk. "Do 'jobs follow people' or 'people follow jobs'? A meta-analysis of Carlino-Mills studies." In 45th Congress of the European Regional Science Association, pp. 23-27. 2005.
- Jackson, Tony. (2015) "Interregional Place-Branding Concepts: The Role of Amenity Migration in Promoting Place-and People-Centred Development." In *Inter-Regional Place Branding*, pp. 73-86. Springer International Publishing.

- Krishnapillai, S. H. Kinnucan, and J. Leonard. (2014) "Employment and Population Growth in Florida's Counties." *IUP Journal of Applied Economics*. 13, 7-19
- McGranahan, David A., Timothy R. Wojan, and Dayton M. Lambert. (2010) "The rural growth trifecta: outdoor amenities, creative class and entrepreneurial context." *Journal of Economic Geography*: lbq007.
- Rossiter, W. S. (1890) "A Century of Population Growth in the United States, 1790 to 1890." .
- Schmitt, Bertrand, and Mark S. Henry. (2000) "Size and growth of urban centers in French labor market areas: consequences for rural population and employment." *Regional Science and Urban Economics* 30, 1, 1-21.
- Verhulst, P. F. (1845) "Mathematical researches into the law of population growth increase." *Nouveaux Mémoires de l'Académie Royale des Sciences et Belles-Lettres de Bruxelles* 18, 1-42.
- Weinstein, Amanda, and Mark Partridge. (2015) "How Can Struggling Communities Make a Comeback?." Swank Program Policy Briefs. (Jun., 2011). <http://aede.osu.edu/sites/drupal-aede.web/files/Comeback%20Cities%20June>.

Photo Credits

- Flickr Creative Commons. Unknown (pg 1), JensSchottKnudsen (pg 2), US Army RDECOM (pg 5), UC Davis College of Engineering (pg 5).

Production Credits

- © Center for Business and Economic Research, Ball State University.

Authors

- Michael J. Hicks, PhD, director, Center for Business and Economic Research, Ball State University. George & Frances Ball distinguished professor of economics, Miller College of Business, Ball State University.
- Dagney Faulk, PhD, director of research, Center for Business and Economic Research, Ball State University.

Graphics

- Gerrod Jones, undergraduate graphics assistant, Center for Business and Economic Research, Ball State University.