

WHY ARE DEATH RATES RISING AMONG WHITES IN MISSOURI?

COMMUNITIES FACING NEW SOCIAL & ECONOMIC REALITIES



Missouri Foundation
for Health
a catalyst for change



VCU



Center on
Society
and Health

University of Pittsburgh
Graduate School of Public Health



WHY ARE DEATH RATES RISING AMONG WHITES IN MISSOURI?

Death rates have generally been decreasing in the United States and other industrialized countries, due to advances in public health and medicine. However, a reverse pattern has been observed among young and middle-aged whites^a in Missouri, whose death rates have increased since 2000.^b

This alarming increase in mortality is consistent with findings from national studies, which also report rising death rates among certain groups of whites, especially those who are middle-aged, have less education, and women.¹⁻³

To better understand where and why this is happening in Missouri, the state's vital statistics were examined from 1995 to 2014. This report summarizes the findings, including a detailed comparison across the state's 114 counties and the city of St. Louis. The study was funded by Missouri Foundation for Health and involved a partnership between the Center on Society and Health at Virginia Commonwealth University and the Graduate School of Public Health at the University of Pittsburgh.

^a For simplicity, this report uses “whites” as shorthand to refer to non-Hispanic whites (those who do not designate themselves as Hispanic).

^b Trends in death rates in this report generally refer to age-adjusted rates, in which the “crude” mortality rate was recalculated to account for changes in the age distribution of the population over time.

WHAT ABOUT PEOPLE OF COLOR?

At the same time (1995–2014) that death rates were increasing among young adult and middle-aged whites in Missouri, mortality rates among blacks, American Indians and Alaskan Natives, and Asians decreased by 23 percent, 24 percent, and 26 percent, respectively. Mortality rates among Hispanics in Missouri decreased by 53 percent. Nonetheless, troubling health disparities persist: Missourians of certain races (notably blacks) live shorter and less healthy lives than whites, Asians, and even Latinos. By 2010–2014 the death rate among blacks remained 1.2 times that of whites. Continued efforts are needed to reduce the persistently high mortality rates among people of color. In addition, the unprecedented reversal of the usual decline in death rates among whites requires attention. This potential cause of the narrowing gap between blacks and whites has implications for people of all races and ethnicities, and is therefore examined here.

WHAT CAUSES OF DEATH ARE RESPONSIBLE FOR CHANGING DEATH RATES AMONG WHITES?^c

The rise in death rates among whites occurred among those ages 25–59 years and was isolated to 79 of the 114 counties^d in Missouri. The leading causes responsible for the excess deaths in these counties were substance abuse (e.g., drugs, alcohol, and tobacco) and suicides. An estimated 68 percent of these excess deaths were due to accidental drug overdoses, suicide, alcoholic liver disease, and chronic lower respiratory disease (caused mainly by smoking). The rise in drug and alcohol abuse and suicides is striking—what some have called “deaths of despair”:⁴

DRUGS: Death rates from accidental drug overdoses in the 79 affected counties increased by 585 percent between 1995 and 2014 among young and middle-aged whites (ages 25–59 years), claiming a total of more than 3,000 lives in this age group between 2010 and 2014.

^c The study focuses on non-Hispanic whites, with the expectation that understanding the causes of this phenomenon among whites could be relevant to all racial and ethnic groups.

^d This report uses “affected counties” as shorthand for the 79, largely rural counties in Missouri in which an increase in all-cause mortality was observed between 1995 and 2014.



585%
INCREASE
IN DRUG
OVERDOSE



763%
INCREASE
IN ALCOHOL
POISONING



30%
INCREASE
IN SUICIDES

The rise in drug and alcohol abuse and suicides is striking—what some have called “deaths of despair”

- Fatal drug overdoses also became more common among teens after 1995, increasing by 439 percent among whites ages 15-19 years.
- Whites ages 50-59 years experienced the largest relative increase in fatal drug overdoses after 1995.

ALCOHOL: Death rates from alcohol poisoning (e.g., binge drinking) among whites ages 25-59 years increased by 763 percent between 1995 and 2014.

SUICIDE: The suicide rate in whites ages 25-59 years increased by 30 percent after 1995.^e

- The most common method of suicide—death by firearm—rose significantly among those ages 45-59 years.
- Non-firearm suicides increased by 51% after 1995 among whites ages 25-59 years. The most common method—hanging, strangulation, and suffocation—increased by 156%.

Although other studies have also reported increased death rates among whites from drug overdoses, alcoholism, and suicide, **our detailed analysis also found dramatic increases in deaths from organ diseases, which accounted for a large proportion of excess deaths among middle-aged whites.** The medical disorders responsible for these deaths included chronic lung disease, viral hepatitis, liver cancer, heart disease, and other organ diseases, many having potential links to substance abuse and trauma (e.g., accidents), among other risk factors. Examples are shown in Figure 1:

^e Suicides among whites ages 60-64 years also increased significantly after 1995.

Figure 1. Increases in deaths among whites ages 25-59 years in Missouri, 1995-2014



Notes:
 †Deaths from drug overdoses and alcohol poisoning refer to accidental overdoses.
 *Whites ages 25-59 years who died from specific causes in the 79 affected counties.

CHRONIC LUNG DISEASE: Smoking is a leading cause of chronic lower respiratory disease. Mortality from this disease among whites ages 25-59 years in the 79 affected counties increased by 24 percent after 1995. The increase was concentrated among those age 45 years and older and was also observed among adults of advanced age (80 years and above).

VIRAL HEPATITIS: The use of injectable drugs increases the risk of certain viral infections of the liver, such as hepatitis C, a potentially fatal chronic liver disease. Death rates from viral hepatitis among whites ages 25-59 years increased by 56 percent in the affected counties between 1995 and 2014, with the death rate from hepatitis C in particular increasing 10-fold (865 percent) after 2000. The rise in viral hepatitis deaths was concentrated among those ages 50-64 years.

LIVER CANCER: Hepatitis C and other kinds of viral hepatitis increase the risk of liver cancer. Death rates from liver cancer among whites ages 25-59 years increased by 73 percent between 1995 and 2014. The increase was concentrated among those age 50 years and older, notably older adults ages 60-79 years.

CHRONIC LIVER DISEASE: Death rates from alcoholic liver diseases, such as cirrhosis, increased by 32 percent after 2000. Whites as young as age 35-39 years and as old as age 70-74 years were impacted.

HEART DISEASE: Heightened alcohol consumption—among the risk factors for a variety of cardiovascular disorders—might explain rising mortality rates from certain heart conditions. For example, the death rate from hypertensive heart disease among whites ages 25-59 years increased by 37 percent after 1995. Most of these deaths occurred among older adults.

Whites in the affected counties also experienced significant increases in death rates from other causes, such as obesity, kidney failure, sepsis, neurologic disorders (including anoxic brain damage), and maternal deaths related to child birth. A variety of factors could be responsible for these trends, but common contributors could include increased smoking, overeating, drug and alcohol use, and catastrophic damage to vital organs.

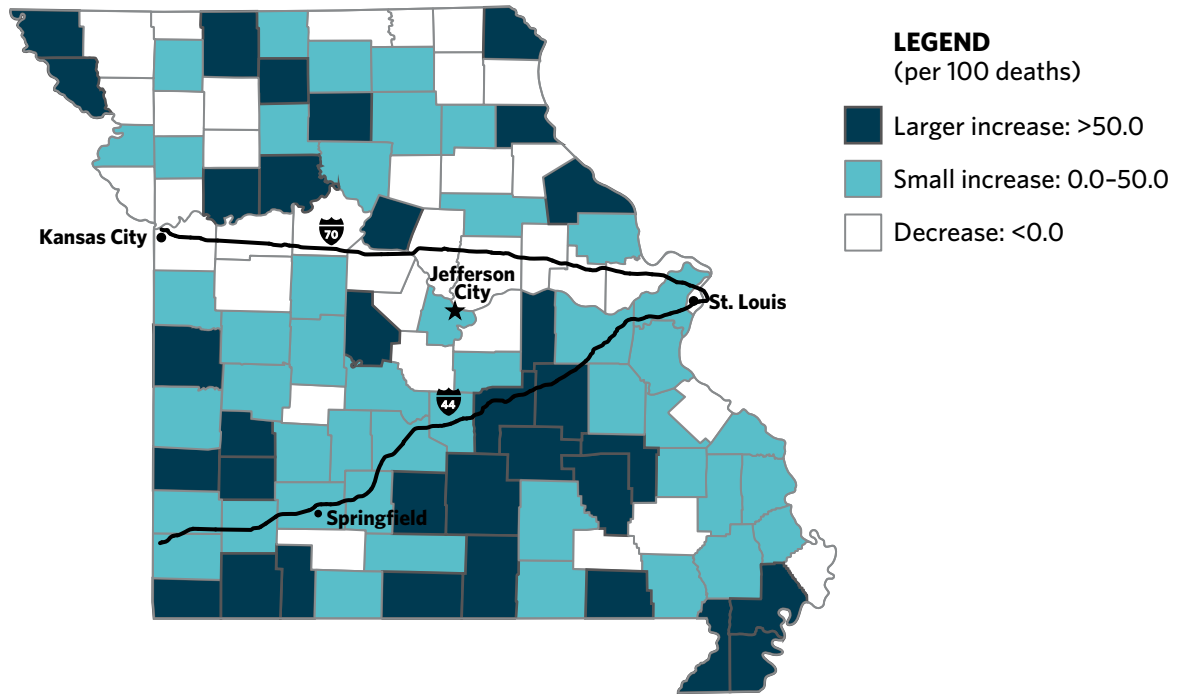
WHERE AND WHY IS THIS HAPPENING?

Rural areas have been especially impacted by this trend: The 33 counties in Missouri where mortality increased by more than 50 deaths per 100,000 among whites ages 25-59 years were primarily in the rural southcentral (the Ozarks), southeastern (Bootheel), southwestern, and northwestern regions (Figure 2). The largest mortality increases occurred in the Ozarks and Bootheel regions. These populations are overwhelmingly white and have experienced persistent poverty (defined as 20 percent or more of residents having lived in poverty for the last 30 years).⁵ In contrast, whites in major metropolitan areas (Kansas City and St. Louis) and along the I-70 corridor that links these cities^f were largely spared—their mortality rates *decreased*.

^f The east-west I-70 corridor that links Kansas City and St. Louis includes counties in central Missouri, notably those surrounding the state capital, Jefferson City, and Columbia, home to the main campus of the University of Missouri.

Our detailed analysis found dramatic increases in deaths from organ diseases, which accounted for a large proportion of excess deaths among middle-aged whites.

Figure 2. All-cause mortality increased primarily in rural counties of Missouri

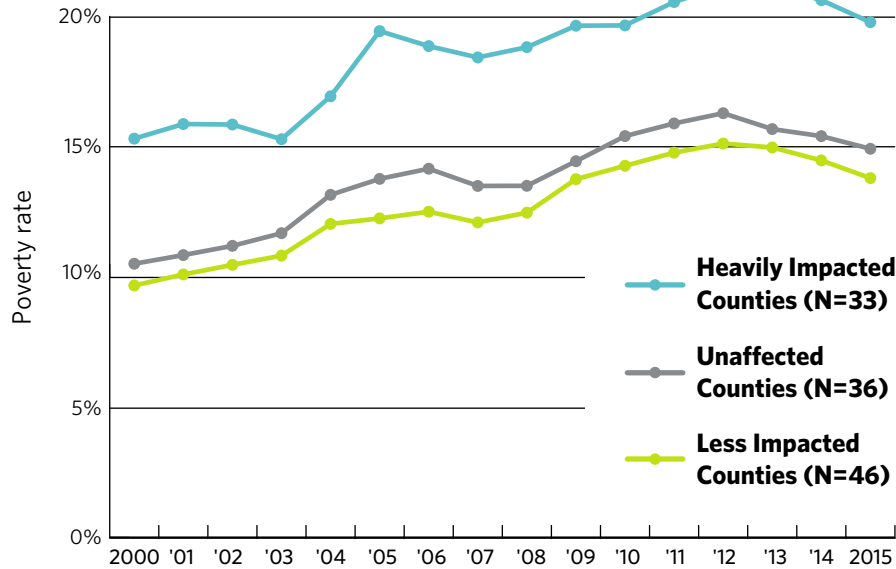


Note: Map depicts the magnitude of change in age-adjusted mortality rates (for all causes) between 1995-1999 and 2010-2014, measured in deaths per 100,000. Counties that experienced a decrease in mortality (lightest shading) were concentrated in metropolitan areas in and around Kansas City and St. Louis and along the I-70 corridor that links these cities. Counties with the largest increases in all-cause mortality—an increase of more than 50 deaths per 100,000 persons (darkest shade)—were largely in rural areas.

The study examined the 79 counties where death rates rose after 1995 among whites age 25-59 years, all of which were located outside of the major urban centers of Kansas City and St. Louis. The characteristics of the 33 counties with the largest increases in death rates (death rates rising more than 50 deaths per 100,000) were compared to those of the 46 other counties with more modest increases (death rates rising 50 or fewer deaths per 100,000). People living in the 33 most impacted counties had less education; lower household incomes; higher rates of unemployment, poverty, and food insecurity; and a larger proportion of foreign-born residents. Residents of these counties had less access to health insurance, health care providers (primary care and mental health), a vehicle, parks, or public transit. The 46 counties with more modest increases in mortality had more urban characteristics, including greater air pollution and violent crime.

Socioeconomic trends in these counties between 2000 and 2015 were also noteworthy. As household income, unemployment, and poverty rates fluctuated during these years across Missouri, especially after

Figure 3. Poverty rates in Missouri counties, 2000–2015



Notes: Heavily and less impacted counties included those in which the increase in age-adjusted mortality between 1999 and 2014 was greater or less than 50 per 100,000 deaths, respectively. Source: U.S. Census Bureau, Small Area Income and Poverty Estimates (SAIPE) Program, 1999-2015; U.S. Census Bureau, Historical Income Tables, Counties, Table C4 (<https://www.census.gov/programs-surveys/saie.html>)

the 2007 Recession, whites in the unaffected counties (decreasing mortality) consistently fared better than those in the 79 counties where white mortality rates increased. The highest poverty rates were in the 33 counties with the largest increases in white mortality (Figure 3). These counties also had consistently poorer employment and household income statistics. For example, at the height of Missouri’s economic downturn in 2010, the unemployment rate among whites had climbed to 9.5 percent in other counties but rose even higher—to 10.9 percent—in the 33 counties with the largest increase in white mortality.⁶

In short, the counties in Missouri where death rates increased among whites tended to be economically distressed areas.⁷ These are places where families experienced limited job opportunities, stagnant wages, and increasing poverty—and where mounting frustration and despair might be expected. The reversal in mortality patterns reported here, and the startling spike in deaths from substance abuse and suicides, could be a direct response to economic stresses, but the phenomenon is probably more complex. After all, populations of color have experienced greater and more longstanding economic stresses, but their death rates steadily *decreased*.



The counties in Missouri where death rates increased among whites tended to be economically distressed areas.

Other explanations for health trends among whites must therefore be considered. The influx of opioids into many communities is a prominent concern. In addition, social trends may also be relevant. For example, rural communities may not provide the levels of social support that exist in urban areas, and social ties may have weakened during the years examined in this study. Moreover, affected individuals and communities may lack the resilience needed to endure social and economic hardships and the cumulative stress of these challenges, which represent a distinct change from past expectations. During the two decades this report studied (1995-2014), young and middle class whites—the age group examined here—experienced economic and social instability unlike that of their parents and grandparents. In the post-World War II generation, loyal workers could often count on a job for life, with health insurance, a pension, and other benefits. Earnings were generally stable enough to finance a home, put children through college, and plan for retirement.⁸⁻¹³ Working-class white households were largely protected from the social disadvantage and economic insecurity that are common today and that people of color have experienced for generations. Today’s generation may be experiencing a crisis of confidence in the “American dream.”

Frustration and hopelessness over this uncertain future would be expected to increase anxiety and depression. Over time, chronic stress, despair, and the pain they produce can induce harmful coping behaviors. Some people turn to food, resulting in overeating and the consumption of calorie-dense fast foods. Some people cope with stress by smoking, which increases the risk of tobacco-related diseases (e.g., emphysema). Some people are overcome by anxiety or depression; feelings of hopelessness can lead desperate individuals to commit suicide. Some people self-medicate with alcohol or drugs to relieve their psychic pain. And some people act out in violence, causing injury to others.

These stresses, induced by greater social and economic hardships, may have greater impact in rural areas, where access to resources is more remote and jobs are scarcer. In rural America, entire regions—not just individuals—have lost opportunities for employment due to the collapse of major industries. Rural Missouri is no exception. The disappearance of the once-thriving railroad industry and the growth in farm mechanization along the upper Delta contributed to the persistent poverty that plagues southcentral and southeastern rural Missouri.¹⁴ White mortality rates *increased* in the Ozarks, where the rugged, rocky terrain has isolated communities for generations and interfered with agriculture, travel, and business development.¹⁵ Manufacturing and technology jobs are therefore limited, and most residents work in



Today's generation may be experiencing a crisis of confidence in the "American dream."

service-related positions with limited incomes.¹⁶ Conversely, *decreased* mortality was observed in northeastern Missouri, an area that is also largely white and rural but has experienced job growth, due in part to fertile farmlands, a strong transportation network, and large employers (e.g., General Mills, Kraft, Con Agra).¹⁷

WHAT SHOULD BE DONE?

While further research is needed to understand this phenomenon, rising death rates should be considered a public health crisis in need of urgent action. Policies to reverse this trend and save lives include not only topic-specific solutions but also social and economic policies to address the upstream conditions that may be driving people to their deaths. Topic-specific solutions will not achieve meaningful impact without addressing the root causes that are inducing drug and alcohol use and producing the desperation that causes suicides. These strategies are needed to support all communities that are suffering, not only whites but all racial and ethnic groups.

The rising mortality rates among whites appears to be unique to the United States and not widely reported by other developed countries that are also experiencing the economic impacts of globalization. The absence in this country of robust social benefits (e.g., universal health care, subsidized post-secondary education, paid leave, job retraining, etc.) may make working-class Americans uniquely vulnerable to rapid shifts in the global economy. Policy approaches that enhance social benefits and rebuild the social safety net may help blunt the rise in death rates.

This health crisis requires action by decision-makers in sectors outside of health to help boost the economy, increase wages, create jobs, reform education, and revitalize communities. The most promising solutions cut across sectors and support improvements across various demographic groups: investments in communities that improve the material wellbeing and health of families can also benefit education, workforce productivity, and the infrastructure and economic vitality of communities. Conversely, the neglect of disadvantaged communities—especially cutbacks that reduce access to health care, safety net programs, and community investments—can contribute not only to increased disease rates but also higher health care costs for employers and government and sicker workforces that weaken corporate competitiveness. Health care reforms that result in weakened coverage will, in the face of rising death rates, escalate the death toll.

This health crisis requires action by decision-makers in sectors outside of health to help boost the economy, increase wages, create jobs, reform education, and revitalize communities.

POLICY STRATEGIES TO ADDRESS RISING MORTALITY RATES



STRENGTHEN BEHAVIORAL HEALTH SERVICES

- Prevention, detection, and early treatment of drug and alcohol abuse—including the opioid epidemic
- Strategies for suicide prevention, including better access to treatment for depression and other risk factors for suicide



ADDRESS ROOT CAUSES BY IMPROVING ECONOMIC AND SOCIAL CONDITIONS FOR POPULATIONS IN NEED

- Policy action by government and the private sector to improve job opportunities, increase wages, reduce poverty, and promote economic mobility
- Reforms and investments to improve the quality of education—from preschool through high school—and to improve the affordability of college, vocational training, and professional education



INVEST IN COMMUNITIES

- Economic development by business, investors, and philanthropy, along with the promotion of new industry in marginalized and resource-poor rural counties
- Civic engagement and cross-sector partnerships to leverage and target resources and expand opportunities to break the cycle of poverty
- Cross-racial alliance building to understand and address common causes of health threats facing different racial and ethnic groups



PREPARE THE HEALTH CARE SYSTEM FOR EXPANDING CASELOADS

- Affordable health care and insurance coverage, and strategies to address shortages in clinicians and facilities
- Resources to address expanding caseloads among clinicians, practices, hospitals, emergency medical services for care at the scene, intensive care in the hospital, long-term care in rehabilitation facilities, and psychological counseling for mental illness and addiction



CONDUCT RESEARCH ON UNDERLYING CAUSES

- Establish the causal links responsible for rising death rates
- Research by social scientists and economists is also important to better understand the unique challenges facing young and middle-aged whites, the explanations for deteriorating health in this population while health improves in other racial and ethnic groups, and the economic and social conditions in impacted communities, such as rural counties

CONCLUSIONS

The dramatic rise in opioid addiction and fatal overdoses have rightfully alarmed the public and policymakers. But *the opioid crisis is the tip of an iceberg*: many people are dying from the use of other drugs, alcohol abuse, the injuries and diseases they cause, and suicides. The death toll will not stop by attending only to drug abuse. Focusing upstream is also a priority: the root causes that are driving people to their deaths must be addressed. Alleviating the social and economic hardships responsible for chronic stress may do more to ease desperation, and thus may save more lives, than focusing exclusively on symptoms.

Meaningful attention to these root causes requires a partnership of policymakers that cuts across sectors, in which the fields of public health and medicine collaborate with government officials and business leaders whose decisions affect the economy, increase wages, create jobs, reform education, and revitalize communities. These upstream conditions are not solved by doctors and addiction specialists, but by policies that strengthen the middle class and provide the poor with basic resources to climb the economic ladder, such as a good education.

The increasing death rates among whites in Missouri, and the apparent anguish they are experiencing, are poignant reminders of how much is at stake: not just the length of our lives but the health of our children, the stability of our economy, and the future of our communities.

NOTES

This project was funded by Missouri Foundation for Health. The scientific methods were first developed with funding from The California Endowment.

The methods used for this analysis, as well as detailed data, tables, and maps on which this report was based, are available in the Technical Supplement (https://mffh.org/wordpress/wp-content/uploads/2017/12/StateMortalityStudies_Missouri_TechnicalSupplement.pdf). Additional information is online at societyhealth.vcu.edu.

Prepared by

Steven H. Woolf, MD, MPH¹

Derek A. Chapman, PhD¹

Jeanine M. Buchanich, MEd, PhD²

Latoya Hill, MPH¹

Kendra J. Bobby, BS²

Lauren K. Snellings, MPH CHES¹

Emily Zimmerman, PhD¹

Heidi L. Schoomaker, MA¹

¹ Center on Society and Health, Virginia Commonwealth University

² Department of Biostatistics, Graduate School of Public Health, University of Pittsburgh

REFERENCES

1. Case A, Deaton A. Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proc Natl Acad Sci U S A*. 2015;112:15078–15083.
2. Shiels MS, Chernyavskiy P, Anderson WF, et al. Trends in premature mortality in the USA by sex, race, and ethnicity from 1999 to 2014: an analysis of death certificate data. *Lancet*. 2017;389:1043-1054.
3. Masters RK, Tilstra AM, Simon DH. Explaining recent mortality trends among younger and middle-aged White Americans. *Int J Epi* 2017: <https://doi.org/10.1093/ije/dyx127>.
4. Khazan O. Middle-aged white Americans are dying of despair. *The Atlantic*. November 2015.
5. USDA Economic Research Service using data from the U.S. Census Bureau, American Community Survey, county-level 5-year estimates, 2007-2011. Accessed 8-25-17 at <https://www.ers.usda.gov/topics/rural-economy-population/rural-poverty-well-being/geography-of-poverty.aspx>
6. U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics Information and Analysis (LAUS), Labor force data by county, 2000-2015 annual averages (<https://www.bls.gov/lau>).
7. Missourians to End Poverty Coalition. *State of the State: Poverty in Missouri*. 2014.
8. Gabler N. The secret shame of middle-class Americans. *The Atlantic*. May 2016.
9. Chen VT. All hollowed out: the lonely poverty of America’s white working class. *The Atlantic*. January 2016.
10. McGreal C. Financial despair, addiction and the rise of suicide in white America. *The Guardian*. February 2016.
11. Vance JD. *Hillbilly Elegy: A Memoir of a Family and Culture in Crisis*. New York: Harper Collins; 2016.
12. Putnam RD. *Our Kids: The American Dream in Crisis*. New York: Simon & Schuster, 2016.
13. Chetty R, Hendren N, Kline P, Saez E. Where is the land of opportunity? The geography of intergenerational mobility in the United States. NBER Working Paper No. 19843. *Q Journal Econ Research*. 2014;129:1553-1623.
14. Dougan MB. “Missouri Bootheel,” in *The Encyclopedia of Arkansas History and Culture*. Butler Center for Arkansas Studies, Central Arkansas Library System, 2011.
15. Rossiter P. *A Living History of the Ozarks*. Gretna, LA. Pelican Publishing; 2nd ed.,1992.
16. Tackett M. Life hits bottom in the Missouri Bootheel: Study details problems in Missouri’s poorest region. *Chicago Tribune*, May 20, 1990.
17. Missouri Economic Research and Information Center. *Northeast Region Industry Analysis*. Jefferson City, MO: Missouri Department of Economic Development, 2015.