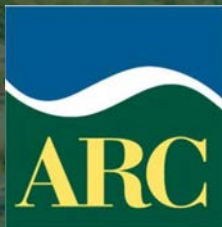
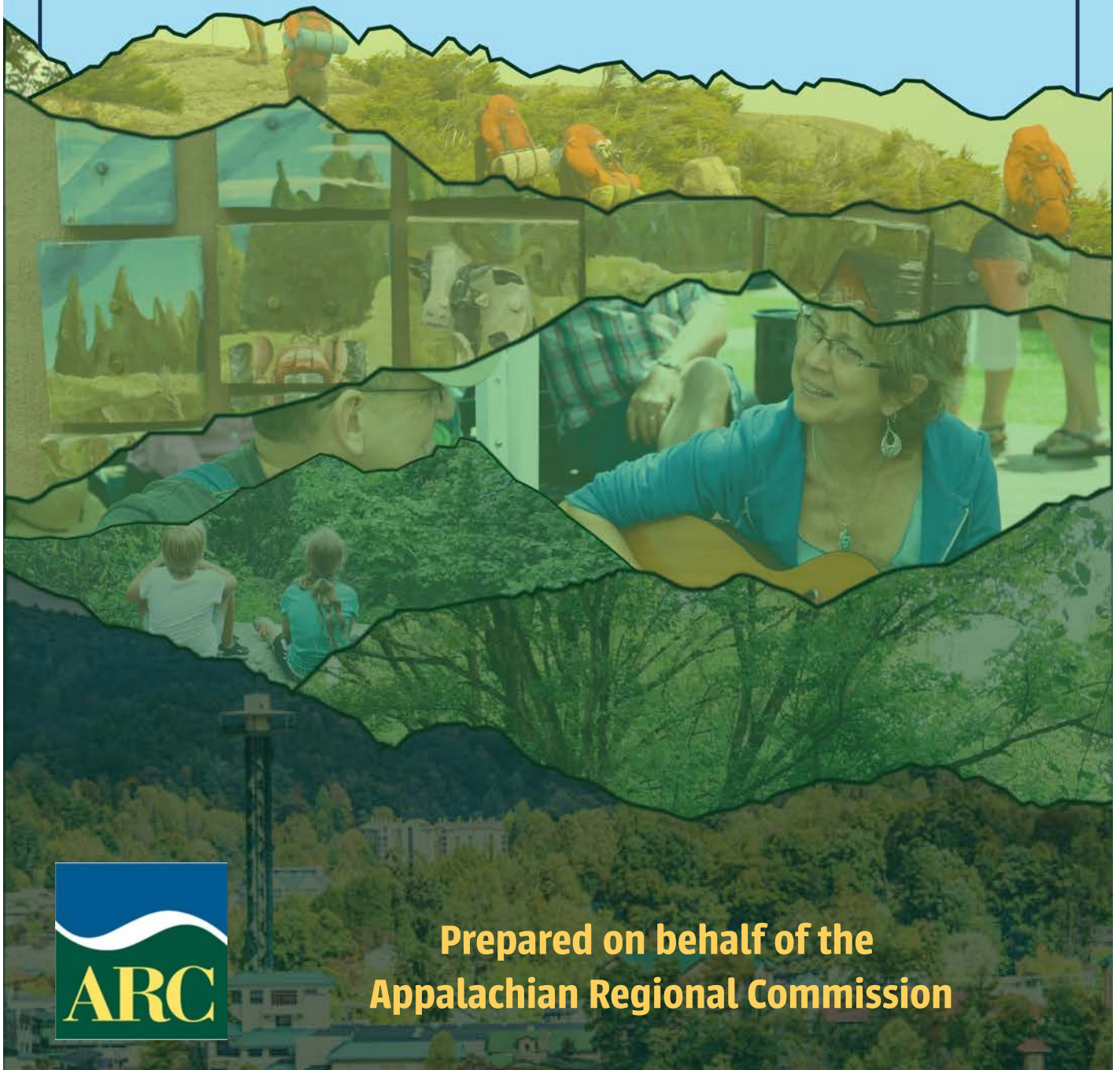


Strengthening Economic Resilience in Appalachia

Technical Report



Prepared on behalf of the
Appalachian Regional Commission

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Report Authors and Contributors

Fritz Boettner, Evan Fedorko,
Evan Hansen

Downstream Strategies
911 Greenbag Road
Morgantown, WV 26508
www.downstreamstrategies.com

Alan Collins, Brianne Zimmerman
West Virginia University
Downstream Strategies
consultants



Stephan J. Goetz, Yicheol Han

The Northeast Regional Center for
Rural Development
The Pennsylvania State University
7 Armsby Building
University Park, PA 16802-5602
<https://aese.psu.edu/nercrd>



Christine Gyovai
Emily Carlson,
Alexandria Sentilles

Dialogue + Design Associates
2573 Pea Ridge Road
Charlottesville, VA 22901
www.dialogueanddesign.com



We thank the following Advisory Team members for
participating in calls and providing valuable feedback:

Jim Baldwin, Cumberland Plateau Planning District Commission
Shannon Blevins, University of Virginia's College at Wise
Dee Davis, Center for Rural Strategies
Eric Dixon, Appalachian Citizen Law Center
Peter Hille, Mountain Association for Community Economic
Development
Debra Horne, Mayor of Town of Dungannon, VA
Leasha Johnson, Mingo County Redevelopment Authority
Justin Maxson, Mary Reynolds Babcock Foundation
Leslie Schaller, Appalachian Center for Economic Networks
Jennifer Simon, Ohio University
Barbara Wycoff, One Foundation

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Jimmie Adkins, LENOWISCO PDC
Philippa Belsches, Just Transition Fund
Shannon Blevins, UVa-Wise Office of Economic Development
Dee Davis, Center for Rural Strategies
Eric Dixon, Appalachian Citizens Law Center
Peter Hille, MACED
Ginny Kidwell, Tennessee Institute of Public Health
Jennifer Simon, Ohio University
Ada Smith, Appalshop
Kent Spellman, Rails to Trails Conservancy

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Jonathan Belcher, Virginia Coalfield Economic
Development Authority
Dee Davis, Center for Rural Strategies
Ta Enos, Pennsylvania Wilds Center
Anthony Flaccavento, Rural Scale
Michelle Foster, The Greater Kanawha Valley Foundation
Peter Hille, Mountain Association for Community
Economic Development
William Isom, Sustainable and Equitable Agricultural
Development Task Force
Leasha Johnson, Mingo County Redevelopment Authority
Jake Lynch, West Virginia Community Development Hub
Deborah Markley, Center for Rural Entrepreneurship
Erik Pages, EntreWorks Consulting
Leslie Schaller, Appalachian Center for Economic
Networks
Ada Smith, Appalshop
Kent Spellman, Rails-To-Trails Conservancy
Bonnie Swinford, Tennessee Chapter of the Sierra Club
Tom Torres, Appalshop Board Executive Committee
Stephanie Tyree, W.V Community Development Hub
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ABBREVIATIONS

ARC	Appalachian Regional Commission
CH	community/health
DM	demographic/mobility
EI	economic/industry
OLS	ordinary least squares
POWER	Partnerships for Opportunity and Workforce and Economic Revitalization
SDM	Spatial Durbin Model
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USDC	United States Department of Commerce
USDL	United States Department of Labor

EXECUTIVE SUMMARY

The economies of many counties and subregions in the Appalachian Region have historically depended on a few dominant industries, such as mining or manufacturing. In recent years, Appalachian coal production—particularly production in the Central Appalachian coal basin—has plummeted. Coal companies have gone bankrupt and jobs have been lost, with devastating impacts on families, communities, counties, and states.

The *Strengthening Economic Resilience in Appalachian Communities* project, sponsored by the Appalachian Regional Commission, was conducted by Downstream Strategies, Penn State, Dialogue + Design Associates, and other partners. The purpose of this project was to quantify economic resilience and understand the underlying factors that explain how communities can buffer economic shocks. Using these factors, our team explored and documented the strategies and policies local leaders can use to enhance the future economic prospects of coal-impacted communities throughout the Appalachian Region. The four key components to this research project were to: 1) develop a comprehensive, quantitative framework to explore economic resilience; 2) identify a series of best-practice strategies for strengthening local economic resilience; 3) conduct 10 in-depth case studies; and 4) produce a concise guidebook that interprets and integrates findings of the research, written specifically for local economic development practitioners. Our multidisciplinary research team performed several linked analyses.

These analyses explore economic resilience: a local community's capacity to absorb, resist, and recover from an economic shock, such as an economy-wide recession or industry restructuring. We performed two statistical analyses that illustrate the independent effects of alternative determinants of resilience.

The first, a conventional ordinary least squares analysis, assesses each county across the United States in isolation. A total of 35 variables are included in this analysis, which are divided into demographic/mobility, economic/industry, and community/health variables. Several statistically significant variables provide insights into the types of policies and practices that can be implemented in local communities to promote economic resilience.

For the demographic/mobility variables, greater resilience is found in counties with a larger proportion of young adults, where more people migrate in and fewer people migrate out of the county, where more people commute out of the county, where the county has a higher population, and where a greater portion of the county's residents have earned college degrees.

For the economic/industry variables, several variables are found to be positively associated with economic resilience, including labor force participation, innovation potential, and industry diversity. Other variables are found to be negatively associated. These include business density; poverty; knowledge diversity; and farming, coal, and manufacturing employment.

Finally, many community/health variables are found to be positively associated with economic resilience, including availability of educational facilities, broadband, and recreational opportunities (employment in arts, entertainment, and recreation), as well as agritourism and direct farm sales. In contrast, social capital unexpectedly has a strong and significant negative effect.

The second statistical analysis, a spatial econometric model, extends the first model by allowing for spillovers of economic processes across county lines. This represents a sensitivity analysis that allows for more nuanced relationships. The same set of 35 variables are investigated. Again, several statistically significant variables provide insights into the types of policies and practices that can be implemented in local communities to promote economic resilience.

When making policy recommendations based on the observed variables, one must consider that a policy implemented in a given county may impact surrounding counties. While certain policies are best dealt with as

single-county issues, others may be more efficiently implemented as a joint effort with surrounding counties (or even at the state level). The variables impacting resilience may also point to different strategies needed to address a policy issue. Based on the results of the spillover analysis, policies may be complementary (cooperative) or competitive across county lines. Cooperative strategies strengthen the resilience of surrounding counties, while competitive strategies weaken their resilience. This analysis also allows policies that support statistically significant variables to be categorized as strictly county-level, cooperative, altruistic-cooperative, competitive, and ultra-competitive.

For example, as illustrated in Table ES-1, policies that increase the diversity of industries and innovation potential, and policies that increase participation of the workforce, were found to have strictly county-level impacts. These approaches neither help nor hurt resilience of neighboring counties.

Cooperative and altruistic-cooperative policies, such as those that increase county population size or protect or enhance natural amenities, would help neighboring counties—not just the county implementing the policy.

On the other hand, competitive and ultra-competitive policies in a county tend to reduce the resilience of surrounding counties and the total region. Examples of such policies include those that attract college-educated people and those that increase the portion of the population aged 65 and over.

Table ES-1: Policies categorized by impact and implications for surrounding counties

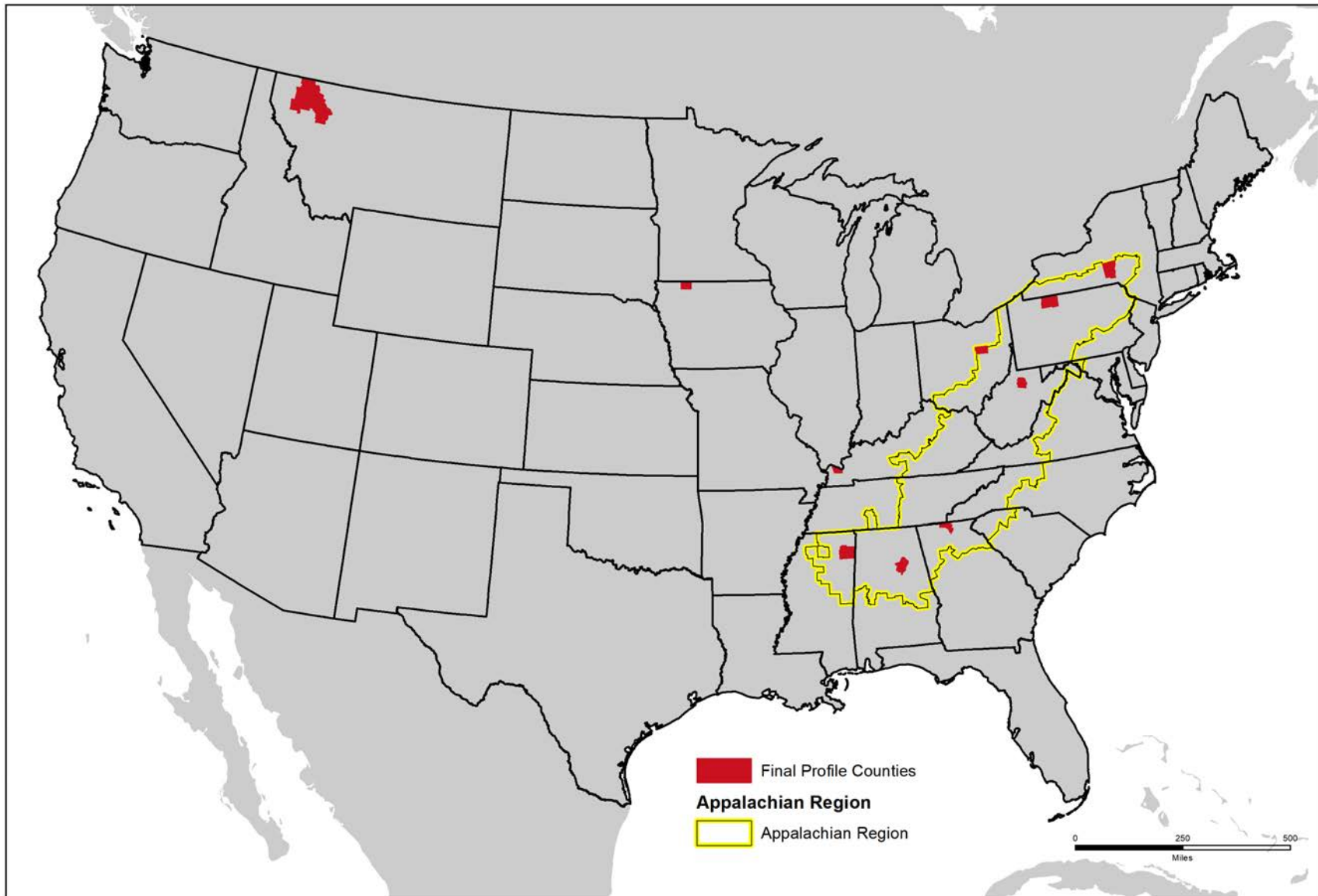
Strictly county-level impacts	Regional-level impacts			
	Cooperative	Altruistic-cooperative	Competitive	Ultra-competitive
Policies that increase the diversity of industries and innovation potential	Policies that increase county population size	Policies that protect or enhance natural amenities	Policies that attract college-educated people	Policies that increase the portion of the population age 65+
Policies that increase participation of the workforce	Policies that decrease the poverty rate	Policies that increase the number of businesses per capita within a county	Policies that attract younger workers (25 to 44)	Policies that encourage direct farm sales
	Policies that reduce the out-migration of county-level population	Policies that increase farm employment		Policies that increase the employment in the arts, entertainment, and recreation
				Policies that increase community college employment
				Policies that increase manufacturing employment

We also performed a qualitative analysis by conducting interviews, a focus group, and a survey to gather feedback from economic development practitioners, elected officials, and others on best practices and strategies for growing economic resilience in the Appalachian Region. We also solicited feedback from an Advisory Team. Results were synthesized into eight best practices, with associated strategies:

1. Invest in education, technology, infrastructure, and broadband.
2. Engage the community over the long term.
3. Create communities where people want to live.
4. Grow youth engagement and next-generation leadership.
5. Identify and grow the assets in the community and region.
6. Build networks and foster collaboration.
7. Move multiple sectors forward for economic development and grow value chains.
8. Cultivate entrepreneurs and develop resources for business start-ups.

Ten case study areas—seven inside the Appalachian Region and three in other parts of the country—were selected to provide further insight into how communities are evolving their approach to economic development (See Figure ES-1). These case studies, along with more details on the best practices and strategies, are provided in an accompanying practitioner guidebook, which is designed for use by economic development practitioners, local government officials, nonprofit organizations, and others working in the Appalachian Region.

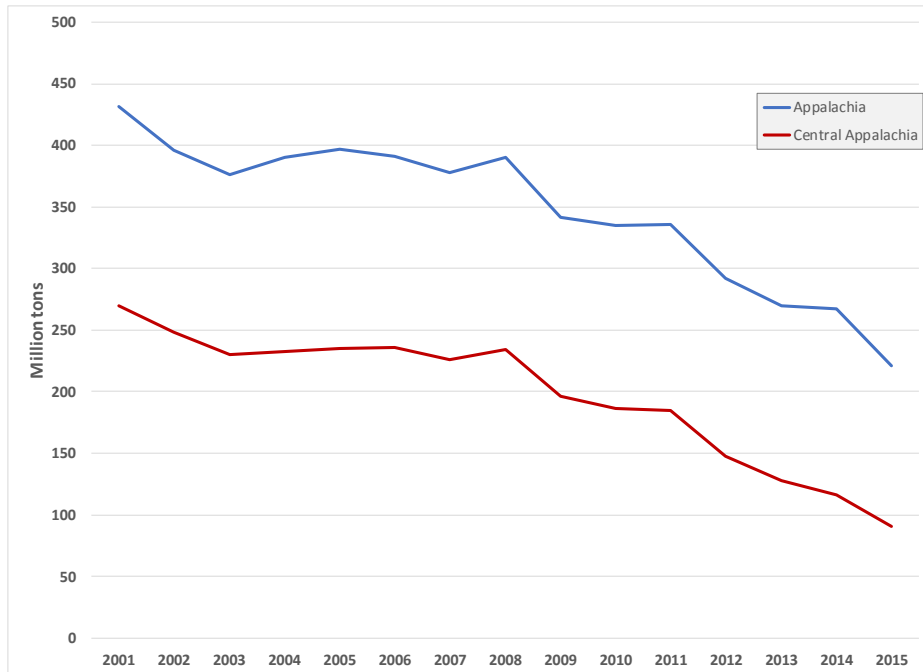
Figure ES-1: The ten case study areas



1. INTRODUCTION

The economies of many counties and subregions in the Appalachian Region have historically depended on a few dominant industries, such as mining or manufacturing. In recent years, Appalachian coal production—particularly production in the Central Appalachian coal basin—has plummeted (see Figure 1). Coal companies have gone bankrupt and jobs have been lost, with devastating impacts on families, communities, counties, and states (See, for example, Hodge, 2016; Hansen et al., 2016; Maher and Frosch, 2015; Farrell, 2016; Office of the Governor, 2015; Hals and Rucinski, 2016).

Figure 1: Coal production in Appalachia and Central Appalachia



Source: United States Energy Information Administration (2017). Note: Appalachian coal production includes Central Appalachian coal production.

Recognizing the recent decline in the coal mining industry and broader energy transitions, the United States Economic Development Administration and the Appalachian Regional Commission (ARC) are collaborating to assist coal-impacted communities in Appalachia through the federal Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) Initiative. Grants support efforts to increase economic diversity, enhance job training, create new jobs, and attract new sources of investment (ARC, 2017).

One critical aspect of the POWER Initiative is understanding how coal-impacted communities can transform and diversify their economies and build resilience against future economic shocks. Economic resilience is defined as a local community's capacity to absorb, resist, and recover from an economic shock, such as an economy-wide recession or industry restructuring. In this research, we examine county-level data to assess local community resilience. This project investigates best practices, strategies, and policies that local leaders can use to enhance the future economic prospects of coal-impacted communities throughout the Appalachian Region.

Our multidisciplinary research team—which includes experts from Downstream Strategies, Dialogue + Design Associates, the Northeast Regional Center for Rural Development at the Pennsylvania State University, and West Virginia University—performed several linked analyses. We conducted two statistical analyses that

illustrate the independent effects of alternative determinants of resilience. The first, a conventional ordinary least squares (OLS) analysis, assesses each county in isolation (see Chapter 2). The second, a spatial econometric model, extends the OLS model by allowing for spillovers of economic processes across county lines. This represents a sensitivity analysis that allows for more nuanced relationships (see Chapter 3).

We also performed a qualitative analysis by conducting interviews, a focus group, and a survey to gather feedback from economic development practitioners, elected officials, and others on best practices and strategies for fostering economic resilience in the Appalachian Region. We also solicited feedback from an Advisory Team, consisting of local development practitioners and representatives from community groups, philanthropic organizations, and universities. Chapter 4 documents these efforts and identifies eight best practices for increasing economic resilience in the Appalachian Region.

In addition, we used the results from our analyses, along with feedback from ARC, to select 10 case study areas (see Chapter 4). These case studies provide further insight into how communities are evolving their approach to economic development both inside and outside the Appalachian Region.

This technical report, one of two reports for this project, focuses on the process used by the research team to conduct the qualitative and quantitative analyses. The second report, a guidebook, provides best practices, strategies, and case studies for use by economic development practitioners, local government officials, nonprofit organizations, and others working in the Appalachian Region.

Several recent ARC reports set the stage for this analysis of economic resilience. Hodge (2016) provides an overview of the coal industry ecosystem, including production, power generation, and supply chain linkages, and presents the most current data and trends on coal-related industries. A previous analysis of economic diversity in the Appalachian Region calculated economic diversity trends in Appalachian counties and sub-regions using four diversity indices: industrial, functional, occupational, and knowledge. Ten case studies were presented that identified successful diversification approaches (University of Illinois at Urbana-Champaign's Regional Economics Applications Laboratory and the Center for Regional Economic Competitiveness, 2014). A 2012 analysis of 10 distressed and formerly distressed Appalachian counties presented strategies for economic improvement, based on both qualitative and quantitative research (Ezzell et al., 2012).

Other recent ARC reports investigated trends in the Region since 1965 (Center for Regional Economic Competitiveness and West Virginia University, 2015), household wealth and financial security (Jacobsen et al., 2013), access to capital and credit (Silver et al., 2013), and entrepreneurial opportunities (Rural Support Partners, 2013). While these are all important variables related to different aspects of economic resilience, our study focuses specifically on resilience related to total number of jobs. We suggest that, although it is not without limitations, employment is a better measure than unemployment, which in a dynamic economy is more sensitive to workers entering and dropping out of the workforce than unemployment. In a recent study, Brown and Greenbaum (2017) used unemployment rate stability to reflect resilience.

Our study introduces a novel set of potential explanatory variables into the regression analysis and uses state-of-the-art spatial econometrics to capture local spillover effects. We focus on the measurement and explanation of factors impacting economic resilience at the county level. Our measurement of economic resilience includes three factors: (1) time of impact or beginning of recession and how it was spread and experienced, (2) the response of affected counties, and (3) the relationship between recession and recovery. To explain economic resilience, three sets of explanatory variables were utilized: demographic/mobility, economic/industry, and community/health. These variables provide alternative, potentially competing predictors of resilience in a community, identified both from the literature and informed by our interviews with key knowledgeable community-based stakeholders. By explaining economic resilience with these variables, we can assess the impacts of potential policies on local as well as regional resilience.

2. THE COUNTY-LEVEL DETERMINANTS OF ECONOMIC RESILIENCE

2.1 Introduction

This section of the report describes the statistical analysis showing the independent effects of alternative determinants of resilience. Here, we examine the relationship between different variables that are hypothesized to be associated with the ability of counties not only to resist but also to rebound from shocks. By using statistical methods, we isolate the effects of individual variables while holding others constant, and therefore place counties on the “same playing field.” For example, we can study the effect of education on resilience, while holding constant the county’s industrial structure.

In this chapter, we begin with a conventional ordinary least squares (OLS) analysis, whereby individual counties are viewed in isolation. The following chapter presents a spatial econometric model, which extends the OLS model by allowing for spillovers of economic processes across county and state lines. This represents a sensitivity analysis that allows for more nuanced relationships among the explanatory and dependent (resilience) variables.

2.2 Procedures

We proceed as follows with the analysis. First, we specify and then estimate a regression model with economic resilience as the dependent variable. This reveals the general, average determinants of resilience across the United States in response to the 2008 Great Recession,¹ which in turn provides insights into strategies that local communities may be able to follow to increase their economic resilience. We chose the regressors from existing literature and by applying what we have learned from the interviews and surveys of knowledgeable community leaders (see Appendices A-D). This serves both to “ground truth” our model and to verify whether the factors mentioned by practitioners in the field have independent measurable effects in the statistical model. Second, following this analysis, the results of which we also review with community leaders surveyed, we use residuals from the regression equation to identify those Appalachian counties that are performing better in terms of resilience than they should be, based on their local conditions.

In addition to comparing our list of top residual counties with the list emerging from the interviews, we examine the top 24 such counties in greater detail to develop a narrower list of candidate case study counties. Some of these were eliminated immediately from further consideration if their higher-than-expected resilience is due to some unique circumstance. For example, counties that are home to a state’s land-grant university or that benefited from the recent shale gas development boom are not of interest, because these conditions are not likely to be easily replicated elsewhere.

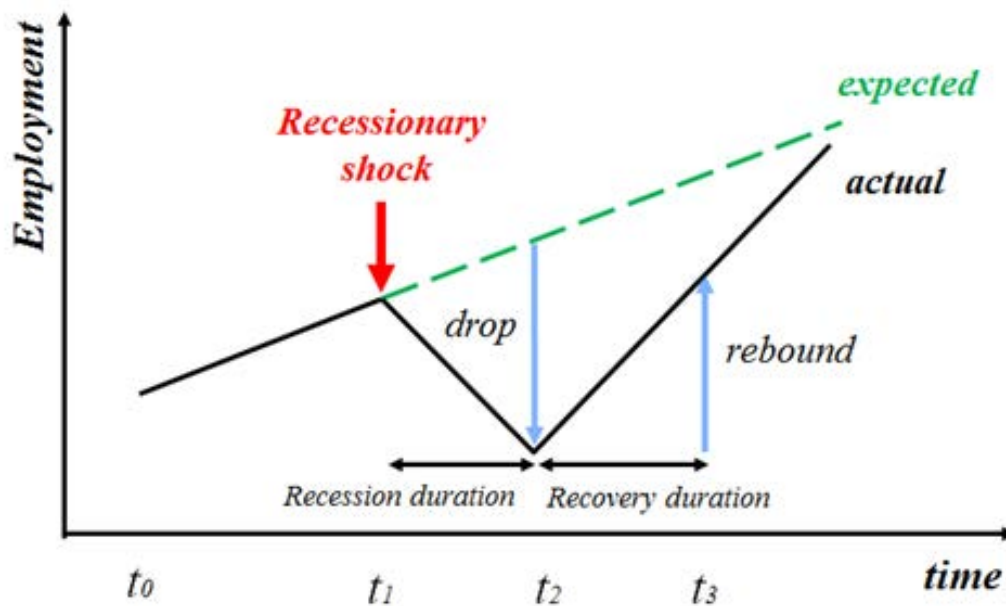
2.3 The determinants of resilience: Model specification

A literature review finds very few studies that have attempted to model resilience using an econometric model (Sherrieb et al., 2010; Hill et al., 2012; Augustine et al., 2013; Tsai et al., 2015). In part, this may be due to the fact that a systematic measure of resilience, defined as the employment rebound in response to a shock, has been developed only relatively recently (Han and Goetz, 2015). Even the recent study by Brown and Greenbaum (2017), published after this project was initiated, uses the notion of unemployment stability rather than the idea of a recovery following a shock. Han and Goetz (2015) calculated resilience as the amount of decline relative to the expected employment, and the amount of recovery relative to the lowest post-shock employment (see Figure 2). One earlier study of potential relevance was prepared by Experian for the United Kingdom; it identified a set of four factors hypothesized to underlie resilience. Also potentially

¹ The Great Recession started in December 2007 and ended in June 2009 (National Bureau of Economic Research, 2017).

relevant to this work are Pender's studies (Pender et al., 2014) on rural wealth and a recent ARC report (Feser et al., 2014) on diversity.

Figure 2: Regional economic change from a major shock and concepts of drop and rebound



Source: Han and Goetz (2015).

For our dependent variable, we use the resilience measure that was developed by Han and Goetz (2015), with the slight modification that we also consider the rate of growth in the period leading up to the peak and subsequent decline. In addition, we update this measure with data through March 2016. As in the original work, we apply a seasonal adjustment filter to the monthly data to smoothen the series. Figure 3 illustrates these resilience values for counties across the United States, and Figure 4 focuses on the counties in the Appalachian Region.

Figure 3: Resilience values for counties across the United States

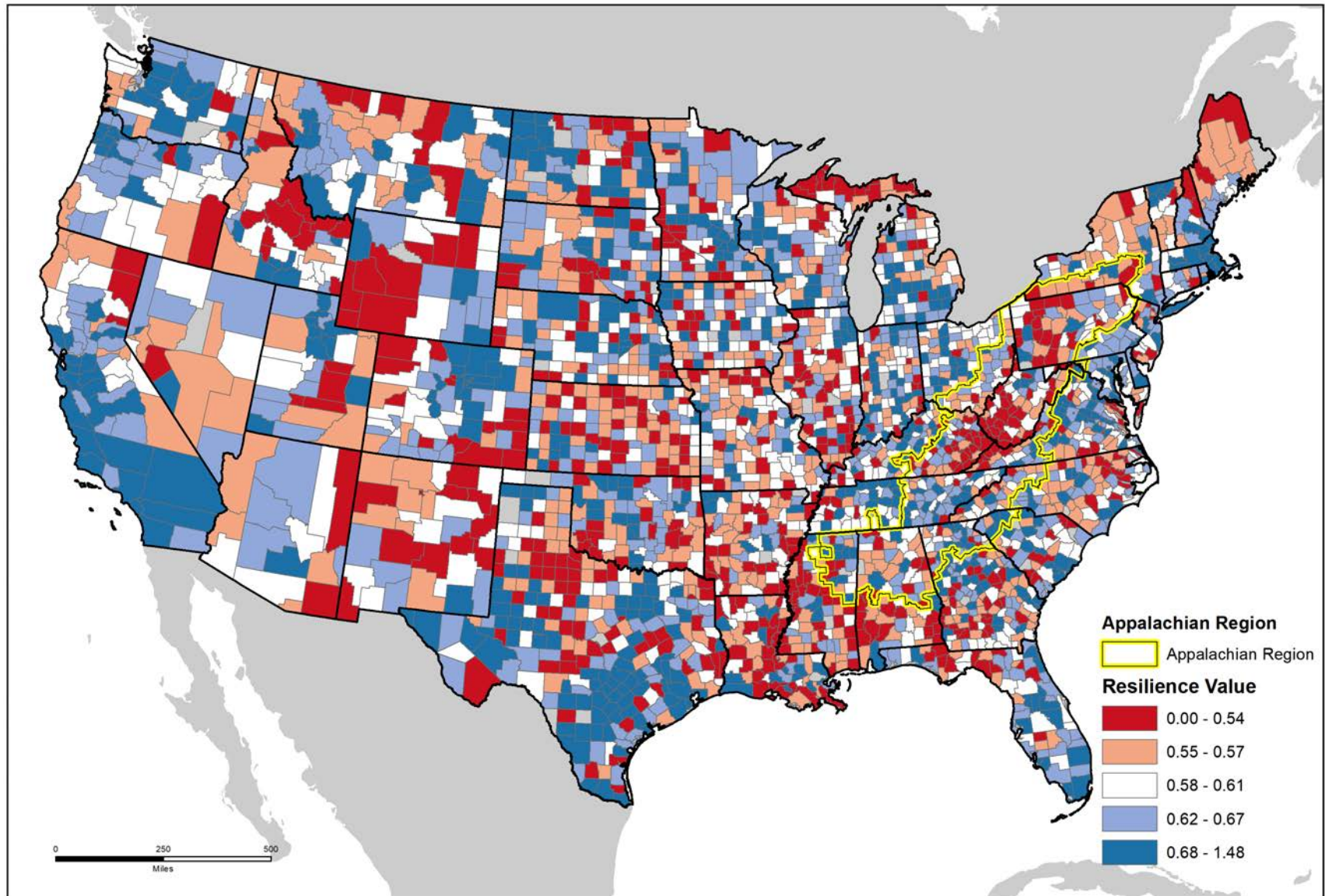
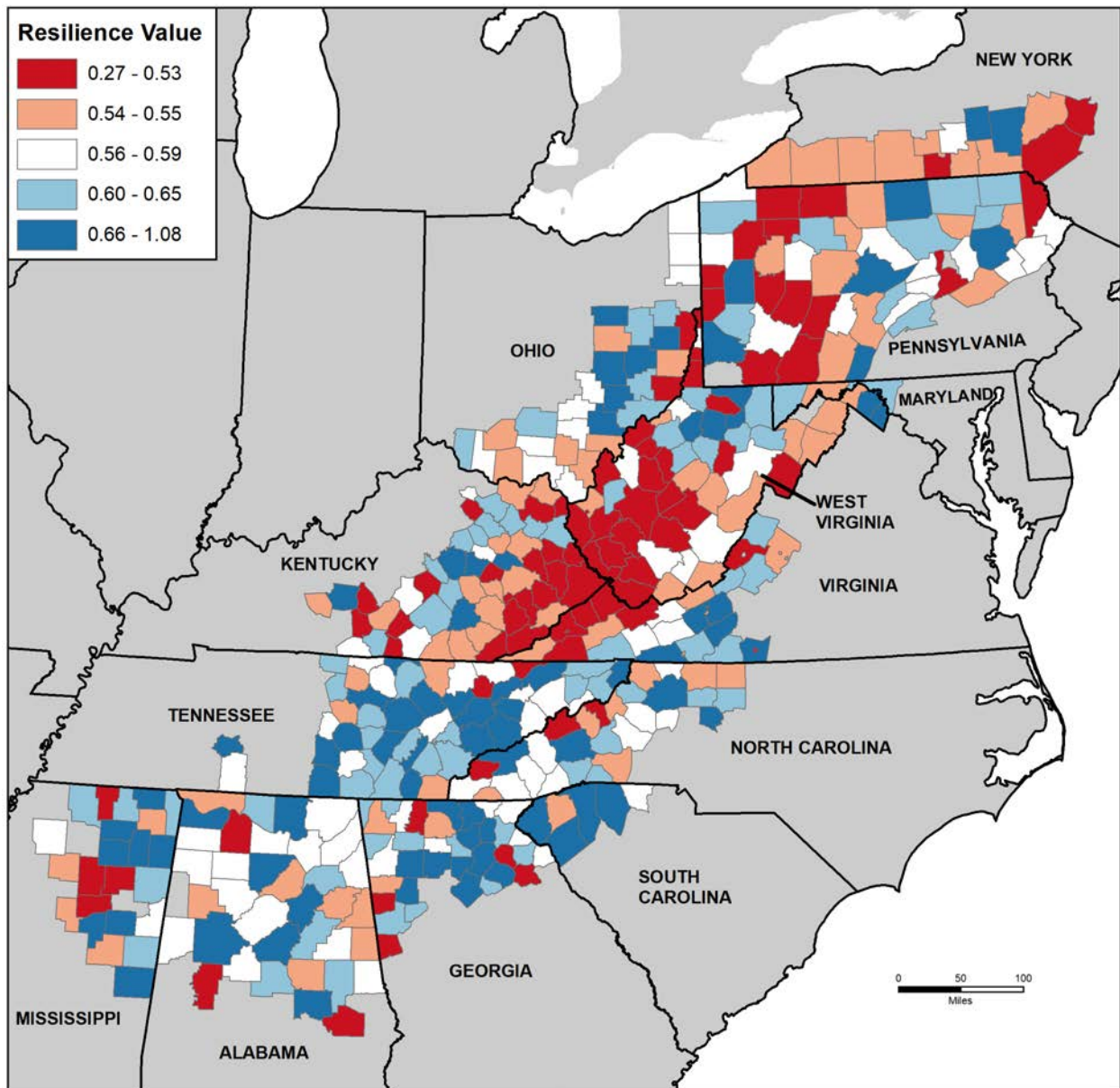


Figure 4: Resilience values for counties in the Appalachian Region



In this report, we develop three sets of variables that potentially affect the resilience of a community: demographic/mobility (DM), economic/industry (EI), and community/health (CH). These are alternative, potentially competing predictors of resilience in a community, identified both from the literature and informed by our interviews and surveys of knowledgeable community-based stakeholders. Because the individual variables in the three sets tend to be highly correlated, we enter them separately as well as jointly ($X = DM, EI, CH$) into a regression equation. This provides:

Equation 1

$$y_i = X_i\beta + \varepsilon_i = DM_i\beta_1 + EI_i\beta_2 + CH_i\beta_3 + \varepsilon_i$$

where, in addition to the variables defined earlier, y measures resilience, β is a vector of parameters, ε is an error term that is assumed to be normally distributed, and i indexes one of the over 3,000 U.S. counties. We also include state fixed effects in the model.

2.4 Variables, data, and their sources

Wherever possible we measure these independent variables before 2008, to reflect the conditions in the counties in the period leading up to the Great Recession. The specific variables included in each of the sub-vectors are described below. Summary statistics, variable definitions, and data sources are shown in Table 1.

All variables are standardized in the OLS and spatial models. With data standardization, the coefficient estimates are imputed as z-score values such that econometric estimation provides standardized coefficients. Standardization allows for direct comparisons of the magnitude of coefficients between variables.²

2.4.1 Demographic/Mobility variables

Among the demographic/mobility variables, we include the age distribution of the county's population, its ethnic diversity, mobility as reflected in migration and commuting, share of population born in state of residence (this is available only at the state level, not the county level), population size and land area, as well as college graduation rates. We hypothesize that counties with a larger share of younger workers (age 25-44) would be more resilient because this cohort is more flexible in terms of employment or career shifts during economic downturns. Greater ethnic diversity, as measured by Alesina and Ferrara (2005), has been shown elsewhere to lead to greater resilience as well as faster economic growth (Montalvo and Reynal-Querol, 2005; Rupasingha et al., 2000; Rupasingha and Goetz, 2007).

For population mobility, our literature review suggests that greater return migration of former residents is associated with greater resilience (Adger et al., 2002). While we are unable to measure whether a migrant formerly lived in the county, we do control for population share born in the state of residence, which is also expected to have a positive effect both because such residents know their community better and because they may have a greater attachment to the place. Just as in-migration is associated with greater resilience—as in-migrants bring with them resources, knowledge, and insights from elsewhere—the opposite is expected for out-migration. Migration is measured from 1995-2000, in the period before the Great Recession. Thus, it reflects longer-standing patterns, including a belief among out-migrants that they are better off elsewhere (we are unable to separate out retirees who are moving away for purposes other than employment, but this group is unlikely to affect the results in a major way).

² Standardized coefficients are further explained here: http://www.bwgriffin.com/gsu/courses/edur8132/notes/Notes8h_RegressionStandardizedCoefficients.pdf. As an example, the coefficient for the "Age 25 to 44" variable in Table 4 is 0.194. An increase in the percentage of the population between the ages of 25 to 44 by one standard deviation (a statistical measure of variation in the variable) impacts economic resilience by increasing it by 0.194 of a standard deviation.

Communities that attract more in-commuters are expected to be more resilient, and the same is expected of communities with more out-commuters (Goetz et al., 2010; Goetz and Han, 2015). The hypothesized reason is that commuters are attracted to places that offer greater and more robust employment opportunities. By the same token, the in-flow of earnings by commuters from other places also has a stabilizing portfolio-type effect. Commuting also facilitates information flows into and out of counties, with potential ideas for solving local problems that have public good characteristics. Commuting can also facilitate starting new businesses.

Holding land area constant, we expect communities with greater resident populations to be more resilient because of greater agglomeration benefits, as well as more opportunities to generate new ideas. For the same reason, we expect college graduate rates to exert the same positive influence on resilience levels in a community.

2.4.2 *Economic/Industry variables*

Among the set of Economic/Industry variables, we include distance from major population centers of at least 250,000 persons. To the extent that the housing-related recession of 2008 was largely an urban phenomenon (Chernick et al., 2011), greater distance is expected to have insulated more rural communities from the shock. The density of businesses per working age population as well as self-employment rates are both expected to be associated with greater resilience, because of a greater capacity to cope with and adapt to an economic shock (Stephens and Partridge, 2011). Communities with lower poverty rates, those with higher labor force participation rates, as well as innovation potential (Goetz and Han, 2017) and industry diversity (Feser et al., 2014), are each expected to exhibit greater levels of resilience in response to a shock. The innovation potential measure uses the input-output table and spatial locations of firms in different industries to measure opportunities both for process (supplier-based) and product (buyer-based) innovation; we expect this to have a positive effect. In the case of industry diversity, we expect a stabilizing portfolio-type effect.

Less obvious is the expected effect of greater knowledge diversity (holding college graduate shares constant). Such communities may be better able to address the fallout from a recession, on the one hand, but they may also be more vulnerable to a shock that affects the extremes of the knowledge distribution, on the other, all else equal.³

We also include in this sub-vector the employment shares in key blue-collar type industries, ranging from farming, oil and gas, coal mining, and manufacturing. These are important industries within the Appalachian Region and they have been profoundly affected both by (environmental) policy and by globalization as well as labor saving technological change (Partridge, Stephens, and Goetz, 2017). We measure these variables in 2005, which would not yet reflect the current shale gas boom.

³ In our analysis, we also consider two other diversity measures: functional and occupational diversity (Feser et al., 2014). Because they are highly correlated with the industry and skills diversity measures, we cannot use them in the model.

Table 1: Demographic/mobility variables, definitions, data sources, and summary statistics

Variable	Definition	Source	Mean	Std. Dev.	Min	Max
Age 25 to 44	% of population 25-44 years in age 20+ population, 2005	USCB, 2005b	34.45	4.99	17.6	54.5
Age 65 and up	% of population 65 years or more in age 20+ population, 2005	USCB, 2005b	20.57	5.04	3.9	42.9
Ethnic Diversity	Ethnic diversity of minorities (except white), 2000	USCB, 2000a	0.04	0.1	0	0.83
Mobility In-Migration	% of in-migration (#in-migrants/#population), 2000	USCB, 2000a	18.54	6.57	0	65.12
Mobility Out-Migration	% of out-migration (#out-migrants/#population), 2000	USCB, 2000a	18.05	6.21	0	100
Mobility In-Communting	% of in-commuting (#in-commuting/#employment), 2000	USCB, 2000a USCB, 2005a	31.21	16.58	2.02	100
Mobility Out-Communting	% of out-commuting (#out-commuting/#employment), 2000	USCB, 2000a USCB, 2005a	50.12	32.14	1.47	100
Residence Born	% of population who born in state of residence, 2000	USCB, 2000a	69.66	14.79	14.32	96.51
Population	Population, 2005, log	USCB, 2005b	4.45	0.62	1.85	6.99
Land Area	Land area in square miles, 2000	USCB, 2000b	953.7	1,309.41	1.99	20,052.5
College	% of population age 25+ with bachelor degree or higher, 2000	USCB, 2000a	16.54	7.84	4.9	63.7

Table 2: Economic/industry variables, definitions, data sources, and summary statistics

Variable	Definition	Source	Mean	Std. Dev.	Min	Max
Distance to City	Distance (miles) to a county with more than 250,000 population, 2005	Author	83.46	76.35	0	565.86
Business Density	# establishments per 1,000 age 20-64 population, 2005	USCB, 2005a	42.09	16.06	0	181.05
Self-Employment	% Nonfarm proprietors employment, 2005	USDC, 2005	21.48	7.75	3	61.8
Poverty	% of poverty all ages, 2005	USCB, 2005c	15.33	6.52	2.5	51
Participation	% of participation, 2000	USCB, 2000a	60.59	7.04	22.6	86.1
Innovation Potential	Potential for economic innovation, 2005	Author	0.32	0.1	0.01	0.77
Industry Diversity	Industry-based economic diversity	Feser et al., 2014	4.53	0.53	0.91	5.60
Knowledge Diversity	Knowledge-based economic diversity	Feser et al., 2014	2.44	0.007	1.88	2.69
Farming	% of employment in Farming, 2005	USDC, 2005	7.92	7.92	0	57.67
Oil & Gas	% of employment in Oil and Gas extraction, 2005	USCB, 2005a	0.26	1.89	0	69.87
Coal	% of employment in Coal mining, 2005	USCB, 2005a	0.33	2.4	0	49.65
Manufacturing	% of employment in Manufacturing, 2005	USCB, 2005a	16.53	12.59	0	69.33

Table 3: Community/health variables, definitions, data sources, and summary statistics

Variable	Definition	Source	Mean	Std. Dev.	Min	Max
Primary and Secondary	Employment in Elementary and Secondary Schools (NAICS 6111) per 1,000 age 5-19 population, 2005, log	USCB, 2005a USCB, 2005b	0.64	0.56	0	2.78
Community College	Employment in Community college (NAICS 611210) per 1,000 age 20-64 population, 2005, log	USCB, 2005a USCB, 2005b	0.13	0.42	0	3.34
Broadband	% of population who live within one or more broadband service areas, 2010	USDC, 2007	76.94	19.04	0	100
Child/Elder Care	Employment in child day care services (NAICS 62441) per 1,000 age 5- population or the elderly and persons with disabilities (NAICS 61412) per 1,000 age 65+ population, 2005, log	USCB, 2005a USCB, 2005b	1.66	0.5	0	3.22
Health Practitioner	Employment in offices of physicians, dentists, and other health practitioners (NAICS 6211-3) per 1,000 population, 2005	USCB, 2005a USCB, 2005b	8.31	6.55	0	99.02
Recreational Opportunity	Employment in arts, entertainment, and recreation (NAICS 71) per 100K population, 2005, log	USCB, 2005a USCB, 2005b	0.61	0.36	0	2.76
Natural Amenity	Natural amenity	USDA, 2005	0.07	2.29	-6.4	11.17
Social Capital	Social capital index, 2005	NERCRD	0	1.39	-3.9	14.38
Federal Funds	Total amount of Federal funds per capita, 2005, log	USDA, 2005	3.39	0.39	2.24	5.21
Voting Competitiveness	% of margin in U.S. Presidential elections voting, 2008	Leip, 2008	25.82	18.07	0.01	87.73
Agritourism	Agritourism receipts (\$) per Agritourism operations	USDA, 2007	7,095.9	21,088	0	428,000
Direct Farm Sales	Direct farm sales (\$) / Farms with direct sales, 2007	USDA, 2007	5,903	8,244	0	130,688

2.4.3 *Community/Health variables*

For the final group of variables, we include among the Community/Health variables employment in primary and secondary educational institutions, as well as employment in community colleges and broadband access. Each of these is expected to be associated with greater resilience. We also include availability of both elder and childcare facilities; healthcare practitioners; and employment share in arts, entertainment, and recreation, along with the U.S. Department of Agriculture/Economic Research Service natural amenities index. Recently there has been considerable excitement about the effect of such creative/recreation activities, and these were also identified in the interviews of key community leaders and stakeholders.

We also include social capital stocks, which have been shown to be important to economic success (Rupasingha et al., 2000), federal funding per capita, and voting competitiveness. The latter measures the absolute value of the difference in the percent of the population voting Republican or Democratic in the 2008 federal election. The hypothesis here is that the greater this number, the less the degree of political competition in the county, and the less likely it is that incumbents seeking reelection will work hard for their constituents. Finally, to measure community cohesion as related to local agricultural activities, we include agritourism and direct farm sales activities. While evidence on the net benefit of these in the literature is mixed (Brown et al., 2014), they also have been mentioned in expert interviews as leading to greater resilience.

2.5 Results

We first discuss regression results for the three individual sub-categories of variables; in all cases we include state fixed effects (see Table 4).

2.5.1 *Demographic/Mobility variables*

Among the demographic and mobility measures, the younger age cohort, as well as both in- and out-migration measures, have the expected signs and are statistically significant at the 1 percent level. Out-commuting, or the ability to rely on other nearby communities for employment, likewise has a positive effect. Places with larger populations and greater shares of college graduates also are more resilient, as expected. Remarkably, ethnic diversity has no statistically significant association with resilience, when we consider only these demographic and mobility variables, which is counter to expectations and other findings in the literature.

2.5.2 *Economic/Industry variables*

Turning next to the economic and industry variables, distance from larger population centers has no effect, while greater business density has an unexpected negative effect in these initial sub-regressions. For poverty and labor force participation, the direction of effects is as expected, and statistically different from zero at the 1 percent level. Greater innovation potential and industry diversity are associated with greater resilience, while greater diversity of knowledge has a negative association, for reasons worthy of further exploration. In particular, the finding that places with a greater diversity of skills sets are less resilient is unexpected. This suggests that counties with more low- and high-skilled workers are more vulnerable to shocks or have more difficulty rebounding in terms of employment. This may be related to layoffs of scientists and other Ph.D. degree holders in research and development departments during downturns, with spillovers to lower-skilled workers such as janitors and entry-level clerks. Communities that rely relatively more on farming, coal, and manufacturing employment are less resilient, as expected, while no statistical effect is detected for oil and gas employment which, again, is measured in the period before the shale gas boom and, as such, does not measure actual participation in, and benefits from, the boom.

2.5.3 *Community/Health variables*

In the third block of variables, availability of educational facilities, broadband, recreational opportunities (employment in arts, entertainment and recreation), as well as agritourism and direct farm sales, are all associated positively with resilience, and in a statistically significant manner. In contrast, social capital unexpectedly has a strong and significant negative effect, while child/elder care, healthcare practitioners, natural amenities, federal funding, and political competitiveness have no effect.

2.5.4 *The entire model*

Turning to the last column of results, which includes all regressors at the same time, we see that the community/health variables are impacted to the greatest degree by including the other regressors. There is insufficient independent variation in a number of these variables, once we include the demographic and economic factors, to allow them to exhibit statistically significant effects on resilience. Beyond that, the following variables remain statistically significant in the overall model and allow us to make initial policy recommendations about factors underlying economic resilience in communities.

Having a proportionately younger (age 25-44) workforce, more ethnic diversity, more in- and less out-migration as well as more in-commuting, and a larger population with greater shares of college graduates are all important factors associated with greater resilience. Ethnic diversity as well as in-commuting shares become statistically significant when we add the economic/industry and community/health variables (while out-commuting shares are no longer significant). Some of these statistically significant factors may more readily be influenced by economic development strategies than others. For example, while the availability of child and elder care is not statistically a factor, communities could seek to develop conditions that support younger career couples (those age 25-44, who are more likely to be raising small children) by providing more of the kinds of resources that would appeal to them (e.g., excellent schools) as well as their children (e.g., opportunities for recreation and sports).

Being welcoming of different ethnicities, including individuals from other countries, is helpful, as is trying to recruit former residents who moved away. This may include those who may now seek to retire (although the population share of 65 years plus is not significant), as well as younger workers who may have picked up important business skills elsewhere and could perhaps move back to start their own businesses. Likewise, either attracting college graduates or encouraging local residents to pursue college training and remain in the county, to the extent that is feasible, would be an important strategy.

In the full model, distance from major metropolitan areas is associated with greater economic resilience, whereas neither self-employment shares nor business density matter in this specification. Before dismissing these latter two factors as central strategies for achieving resilience, however, it is important to test for non-linearities as well as potential interactions. We do this in a sensitivity analysis, with results reported below. While lowering poverty rates to achieve greater resilience is important but not easily accomplished, recognizing the importance of labor force participation and innovation potential in the community as well as seeking greater diversification of the industrial base would be important strategies. In fact, many leaders in the Appalachian Region are starting to recognize the advantages of a diversified economic portfolio over reliance on a single industry such as coal mining (e.g., Gunn, 2017). Such strategies could include more local tourism-type activities, for example. Somewhat surprisingly, greater diversity of types and levels of knowledge is associated with lower resilience.⁴ This should be explored in greater detail in future research. Our regression analysis also confirms that coal counties (as measured by a high share of employment in the coal industry) were less resilient in the recent downturn. The effects of farming and oil and gas are positive,

⁴ The ARC report defines this as (Feser et al., 2014, p. 8) "...employment in twelve broad groups of occupations, with the groups reflecting the different types and levels of knowledge required for success in various professions. This produces a measure of knowledge-based economic diversity (or knowledge diversity)."

while manufacturing dominance had negative effects on resilience; however, these variables are not statistically significant in our model.

Table 4: Regression results for the three subcategories of variables

Variable	Demographic/ mobility		Economic/ industry		Community/ health		Entire model	
	<i>beta</i>	<i>t</i>	<i>beta</i>	<i>t</i>	<i>beta</i>	<i>t</i>	<i>beta</i>	<i>t</i>
Demographic/mobility								
Age 25 to 44	0.194***	5.12					0.099**	2.43
Age 65 and up	0.055	1.39					-0.033	-0.69
Ethnic Diversity	0.006	0.27					0.086***	3.13
Mobility In-Migration	0.107***	3.75					0.119***	4.02
Mobility Out-Migration	-0.073***	-2.94					-0.089***	-3.7
Mobility In-Commuting	0.013	0.51					0.058**	2.04
Mobility Out-Commuting	0.097***	4.07					0.014	0.43
Residence Born	-0.002	-0.09					0.004	0.15
Population	0.213***	6.38					0.279***	4.58
Land Area	-0.002	-0.1					-0.032	-1.5
College	0.207***	7.04					0.107***	2.85
Economic/industry								
Distance to City			0.037	0.87			0.147***	3.22
Business Density			-0.169***	-7.19			0.036	1.02
Self-Employment			-0.004	-0.22			0.007	0.27
Poverty			-0.103***	-3.48			-0.111***	-3.03
Participation			0.188***	6.27			0.085**	2.1
Innovation Potential			0.149***	6.27			0.06**	2.2
Industry Diversity			0.153***	4.94			0.092*	1.93
Knowledge Diversity			-0.092***	-4.4			-0.051**	-2.38
Farming			-0.066**	-2.01			0.059	1.44
Oil & Gas			0.022	0.66			0.044	1.29
Coal			-0.069***	-4.21			-0.063***	-3.82
Manufacturing			-0.113***	-6.08			-0.03	-1.36
Community/health								
Primary and Secondary					0.068***	3.28	-0.007	-0.34
Community College					0.033**	2.02	-0.026*	-1.76
Broadband					0.134***	5.49	-0.035	-1.35
Child/Elder Care					0.018	0.87	0.004	0.17
Health Practitioner					-0.039	-1.60	-0.095***	-4.51
Recreational Opportunity					0.109***	4.62	-0.022	-0.9
Natural Amenity					0.003	0.09	0.006	0.17
Social Capital					-0.102***	-4.07	0.004	0.1
Federal Funds					-0.033	-1.46	-0.008	-0.3
Voting Competitiveness					0.028	1.17	-0.007	-0.29
Agritourism					0.056***	3.48	0.016	1.13
Direct Farm Sales					0.076***	4.00	0.027*	1.7
Constant	***	2.81	***	11.28	***	19.66	***	2.71
N	3,054		3,053		3,050		3,049	
Adjusted R ²	0.2250		0.2112		0.1173		0.2577	

Note: Table shows robust standardized coefficients with state fixed effect. Significance levels: different from zero at *10%, **5%, and ***1% or lower.

Among the community and health factors, only the expansion of direct farm sales remains as one potential local strategy for enhancing resilience. However, beyond making farmers and consumers aware of this possibility through education and marketing or advertising, it is not obvious how to do this. Instead, this variable likely is picking up some kind of community cohesion effect that is unique to the individuals living there and could be difficult to replicate or expand through policy. Even so, it is worth highlighting these kinds of successful communities if only to show others what is possible through effective leadership. It is also noteworthy from our last equation that the effect of community colleges (still positive in the standalone regression for community/health factors) turns negative once we control for the other intervening factors. This would suggest that promoting the number of community colleges is not necessarily a workable strategy for increasing resilience.

Likewise, while regional medical hubs can be important drivers—especially in remote communities, as our expert panel also has suggested—our model suggests that greater employment of healthcare practitioners is detrimental to resilience. Before dismissing the development of healthcare hubs as a potential strategy, this would warrant further investigation. It is also possible that we are picking up a reverse causation in that a less healthy population or workforce, which requires more medical care, is inherently less likely to be able to support a robust and resilient economy. We also note that employment in the primary/secondary education sector, broadband availability, child/elder care availability, recreational opportunities, natural amenities, social capital, federal funds secured, voting competitiveness, and agri-tourism have no effect on resilience in this model.⁵ We examine some of these variables in greater detail in subsequent sensitivity tests discussed below.

2.6 Sensitivity analyses

Before dismissing altogether some of the key variables that were hypothesized to be significant but turned out not to be, or had unexpected signs, we conduct a series of sensitivity tests involving non-linear effects (quadratic terms) as well as interactions between selected variables (see Appendix E and F for detailed results).

When we include a quadratic term for self-employment, the linear term is positive (0.158) while the quadratic term is negative (−0.145), with both being statistically significant. This indicates that the effect of self-employment (our proxy for entrepreneurship) is positive at lower levels of self-employment, increases up to a maximum self-employment rate of 54.5 percent, and then becomes negative at even higher levels of self-employment (indicating too much of a “good thing”). Only nine counties out of the over 3,000 currently have self-employment shares above this maximum (>54.5 percent). Thus, a strategy of promoting self-employment to enhance economic resilience would be most effective in communities starting out with lower levels of self-employment. This emphasis on homegrown entrepreneurship is important, because it was stressed repeatedly by the panel of experts.

We also explore interactions among key variables. For example, a positive effect of social capital on county-level resilience occurs with smaller shares of 25-44-year-olds; with smaller shares of in-commuters; with smaller total populations; and with greater distance from large population centers. Each of these results is plausible and can be explained as follows. Individuals in the 25-44-year-old category are more likely to be launching careers and raising young families. Thus, the effects of any social capital in the community are less likely to be amplified or leveraged (compared to communities with proportionately larger shares of older workers, who may have more free time) in terms of enhancing resilience. While commuting (and migration) can entail benefits in terms of greater information flows (Goetz and Han, 2015), commuters also have less at stake in terms of the general social wellbeing of the communities to which they commute; they are more likely to expend their social capital in the communities where they live. As a result, the weakened effect of

⁵ Digression on model results for ARC region only: when we estimate the regression equations for only the 412 counties of the ARC region, only in-migration rates, distance from major metros, and voting competitiveness show up as statistically significant, with the latter carrying an unexpected positive sign.

social capital in communities with large in-commuter shares is not surprising. In communities with smaller total populations, and that are more distant and isolated from larger cities, the feeling of cohesion and self-reliance (“we have to solve our problems on our own and cannot rely on help from elsewhere”) may be greater, and thus existing social capital can be leveraged to greater effect. The general conclusion from this supplemental analysis is that social capital does matter for resilience, but only under the right conditions. This finding is important because a number of the experts interviewed for this project indicated that social capital was key to economic resilience in a community.

Similarly, we find statistically significant interactions between self-employment rates and a number of variables. Notable among these is that self-employment becomes more effective as a resilience-enhancing strategy in counties with larger populations (perhaps because these businesses can find more customers). Conversely, it becomes less successful as distance to major metropolitan areas declines, perhaps because they have fewer opportunities to sell goods and services into cities. Also, it is less successful as the labor force participation rate and employment in farming each increase. The reasons for this latter finding could be explored further. Again, rather than dismissing the promotion of local entrepreneurship, another key factor identified by the experts, policy makers and planners need to probe more deeply to assess whether the right conditions exist locally.

Federal funding is more effective in furthering resilience in communities that have smaller shares of in-commuters, perhaps because the benefits of such funding do not remain in the community if more workers leave at the end of every day. Having more child/elder care facilities improves prospects for resilience in communities with lower levels of industry diversity. Voting competitiveness matters more for resilience as the rate of in-migration declines. This could reflect the fact that it is more difficult for in-migrants who are new to an area to connect with elected leaders (and those seeking office) to express their preferences. Recreational opportunities and business density also interact negatively, indicating that having a greater business density together with greater recreational opportunities is detrimental to economic resilience; a plausible explanation is that the businesses have too many distractions, or that if there are fewer businesses, the recreational opportunities get used more, thereby contributing to greater resilience.⁶

This discussion has raised more questions for further research and does not provide definitive answers. Our main purpose for including these results of the sensitivity analyses here is to caution against dismissing any one of the strategies identified simply because the variable was not statistically significant in the regression model. Instead, a more nuanced and subtle analysis is needed to understand the full range of effects and conditions under which they work best.

An additional form of sensitivity analysis is included in Chapter 3, which presents a spatial econometric analysis of economic resilience variables and their spillover influences beyond county boundaries.

2.7 Analysis of residuals

The results of the regression analysis reported above are valuable for understanding the independent effects of various factors hypothesized to enhance economic resilience. However, the regression is also valuable in that it highlights those counties that perform much better (or worse) in terms of resilience than they are expected to, controlling for the list of explanatory factors. These counties lie far above (or below) the regression line when the predicted value of the dependent variable is plotted against the actual value (resilience); these counties have very large positive (or negative) residuals.

Residuals are useful in identifying counties for further study, because those with the highest residuals may hold lessons in strengthening economic resilience for counties across the Appalachian Region. When we

⁶ Fan et al. (2016) find that human capital and natural amenities individually and jointly increase wage growth, but in our study, such an effect is not observed for resilience.

select these counties for further study, we want to rule out those that have a unique condition that cannot be easily replicated elsewhere. For example, a county may have experienced a temporary construction boom due to an infusion of outside money. After the boom is over, employment returns to the previous level, and this county is not on a sustainable growth path. Or a county may be home to the state's land-grant university, which is not easily replicated elsewhere in the state.

The list of top-ranked residuals generated by the regression model identifies those counties that performed better than expected after the Great Recession, considering the list of variables included as explanatory factors (see Table 5 and Appendix G). For example, where one would expect counties with greater shares of college graduates to be more resilient than those with smaller shares, some counties may be even more resilient than they should be given their share of college graduates. In this example, something is happening in these communities that makes them more resilient than expected. Whatever that factor is, it is not captured in the regression model, and by identifying it (or them) we may gain additional insights into the determinants of resilience. For example, some communities may have even stronger civic leadership capacity than is reflected in our social capital measure, and other communities may have more farmers markets.

Table 5 shows the top-ranked counties in terms of the resilience residual, calculated from the regression equation. Kemper, MS has the highest residual. Further investigation shows that this county benefited from construction of a lignite power plant around 2008-10, and the high residual reflects the temporary boom in the construction sector, as employment subsequently fell back to the earlier period. Employment growth in construction accounted for three-quarters of the post-Great Recession job boost in this county. Thus, we exclude this county from further consideration.

Using a similar argument, we exclude Doddridge, WV, which benefited from the shale gas boom, and we exclude Monongalia, WV, which is home to West Virginia University and has enjoyed steady growth thanks to that institution. On the other hand, Taylor, WV, which borders Monongalia, WV, has experienced an interesting rebound not just associated with spillover housing development. Therefore, understanding what has happened here through community leadership may prove fruitful in that it can be replicated elsewhere.

For each of the other counties, we list the sector that contributed the most to the higher-than-expected resilience in that county, as well as the percent of the overall county job growth that is accounted for by expansion in this sector(s). In three cases (Taylor, WV; Morgan, TN; and Bledsoe, TN), multiple sectors played important roles. We investigate this further with the goal of identifying a possible strategy that builds on diversification. It is also noteworthy that four counties saw increases in manufacturing as the source of their higher-than-expected resilience levels.

Table 5: Top 24 counties ranked based on regression residuals

Rank	County	Population (2015)	Resilience	Residuals	Dominant sector in recovery	Percent of job growth accounted for by this sector
1	Kemper, MS	10,551	1.081	0.490	Construction	75.4%
2	Swain, NC	13,463	0.908	0.379	Local government	88.3%
3	Doddridge, WV	7,808	0.901	0.323	Natural resources & mining	45.5%
4	Taylor, WV	16,318	0.828	0.254	N/A	N/A
5	Monongalia, WV	88,424	0.844	0.253	Education & health services	25.7%
6	Jackson, GA	50,607	0.895	0.227	Trade, transportation, & utilities	44.2%
7	Harrison, WV	67,989	0.794	0.221	Education & health services	45.9%
8	Union, MS	26,569	0.807	0.204	Manufacturing	62.0%
9	Chenango, NY	51,154	0.75	0.204	Manufacturing	59.4%
10	Choctaw, MS	9,026	0.708	0.198	Local government	62.8%
11	Morgan, TN	20,959	0.784	0.195	N/A	N/A
12	Holmes, OH	41,630	0.812	0.181	Manufacturing	51.3%
13	Bledsoe, TN	12,685	0.852	0.176	N/A	N/A
14	Washington, PA	205,359	0.762	0.165	Professional & business services	38.4%
15	Harrison, OH	15,907	0.652	0.154	Trade, transportation, & utilities	50.5%
16	Pickett, TN	4,997	0.737	0.153	Trade, transportation, & utilities	58.1%
17	Cortland, NY	49,330	0.678	0.145	Leisure & hospitality	51.6%
18	Bradley, TN	93,024	0.806	0.130	Professional & business services	22.8%
19	Madison, KY	78,732	0.762	0.123	Manufacturing	32.7%
20	Itawamba, MS	23,254	0.71	0.122	Manufacturing	93.1%
21	Buncombe, NC	221,642	0.745	0.118	Education & health services	26.9%
22	Grayson, VA	16,153	0.694	0.116	State government	81.2%
23	Oktibbeha, MS	43,985	0.746	0.110	Leisure & hospitality	40.5%
24	Butler, PA	179,522	0.756	0.109	Professional & business services	30.5%

Source: USDL (2015). Note: The data is not seasonally adjusted.

3. THE COUNTY-LEVEL SPILLOVER EFFECTS OF ECONOMIC RESILIENCE

3.1 Spatial econometric analysis: Predicting the spillover effects

This chapter expands upon the regression analysis through application of spatial econometric techniques to identify any possible spillover effects occurring between counties in regards to factors influencing economic resilience. Spillover effects exist when economic activities or policies pursued in one county influence the employment levels in surrounding counties. Previous literature has examined changes in local infrastructure and facilities like roads (Pfaff et al., 2007) or universities (Anselin et al., 2000) and their spillover effects. This literature also examined spillovers initiated with changes in development such as the rural impacts of urban sprawl (Thomas and Howell, 2003; Heimlich and Anderson, 2001; Carruthers and Vias, 2005; and Byun et al., 2005). Spillovers can have either positive or negative impacts on surrounding communities. By implementing regional approaches to address development strategies, public policies can minimize negative spillover effects and/or maximize positive spillover effects (Pender and Reeder, 2011).

In this analysis, we utilize a Spatial Durbin Model (SDM) to measure spillover effects while predicting county-level economic resilience to the 2007-2009 Great Recession. The SDM is a general form for measuring global spillover effects (LeSage, 2014). There are three major advantages to using the SDM. First, it produces global spillover effects, which may be preferred with a national model. This model utilizes an assumption that the explanatory variable effects, on average, are similar throughout the entire observed region (the continental 48 U.S. states). The estimated spillover effects consider the effects on the counties past the identified weight matrix, somewhat like a ripple effect. Conversely, models with local spillover effects only (such as a spatial lag model) consider the effects within the surrounding counties identified within the weight matrix. The second major advantage is that the SDM controls for omitted variable bias when omitted variables are correlated with the dependent variable (LeSage and Pace, 2009). Because a solid theoretical foundation has not been established for explaining county-level economic resilience, omitted variables are likely to occur within our estimation. The final advantage is that it controls for omitted spatially-correlated variables that are correlated with the explanatory/predictor variable.

The structure of the SDM is as follows:

Equation 2

$$Y = \rho WY + X\beta + WX\theta + \varepsilon$$

where $Y_{(N \times 1)}$ is our county-level resilience measure and $X_{(N \times K)}$ is a matrix of standardized explanatory variables (LeSage, 2014). N represents the number of county-level observations, and K represents the number of explanatory variables included within the model. X is composed of the same three categories of variables described in the previous chapter: demographic/mobility, economic/industry, and community/health. We observe the joint efforts of these variables on predicting resilience, while controlling for the spatial dependence in the explanatory variables.

Equation 3

$$X = [DM, EI, CH]$$

The scalar ρ is the measure of spatial dependence between counties, and $W_{(N \times N)}$ is the spatial weight matrix. Both β and θ are parameter vectors ($K \times 1$). The residual error term is represented by $\varepsilon_{(N \times 1)}$. WY measures

the spatial lag in the dependent variable, and ρWY represents the spatial autoregressive term. WX measures the spatial lag in the explanatory variables. The spatial weight matrix, W , is defined by j nearest neighbors.

Our SDM produces coefficient estimates at three levels: direct, indirect, and total effects. These estimates provide an average effect for the entire study region. The direct effect measures, on average, how a change in an explanatory variable in county i affects resilience in county i . The interpretation of the direct effect follows standard OLS coefficient interpretation. The indirect effect is the difference between the total effect and the direct effect. It measures the average impact from an explanatory variable in county i on resilience in j counties surrounding county i , also known as the spillover effect. The total effect is the sum of the direct and indirect effects. The total effect can be interpreted as the average total impact on resilience in every county resulting from a change in an explanatory variable within an individual county i . The scalar ρ estimates the level of spatial dependence in these data. Interpretation of the indirect and total effects is provided for the statistically significant variables below.

3.2 Spatial model results

Initially, we compare the direct effect coefficient estimates from the SDM with the coefficients from the entire model of the OLS regression. The OLS coefficients are shown in Table 4, and they are compared with the direct effect coefficients in Table 6. State fixed effects (coefficients not shown) and robust standard error estimates are included as part of the OLS regression. Both models have a similar level of explanatory power with adjusted R^2 values of approximately 0.25, explaining one-quarter of the variation in the dependent variable. The OLS model does have a slightly higher adjusted R^2 value.

For most explanatory variables, the β coefficient estimates are similar between the OLS model and the direct effects of the SDM. Based on coefficient estimates from either model, the largest positive influences on resilience come from population size, distance to cities, mobility in-migration, and percentage of the population above age 25 with a college degree. Percentage of population in poverty has the strongest negative influence on resilience in both models.

A few variables, however, have different signs between the OLS regression and SDM direct effects: child and elder care, social capital, and voting competitiveness. None of these variables have coefficient estimates that are statistically different from zero in either model. The ethnic diversity, diverse knowledge, community college, and direct farm sale variables have statistically significant coefficients in OLS model, but their coefficients are not statistically significant in the SDM. However, the community college and direct farm sale variables are only statistically significant at the 10 percent level in the OLS model. Conversely, the farming and broadband variables have statistically significant direct effects in the SDM regression, but are not statistically significant in the OLS model. The SDM controls for spatial dependence (bias) in the explanatory variables, but the OLS model cannot.

The direct effect coefficients in Table 6 suggest several conclusions, including, for example:

- The distance to a city of more than 250,000 has a positive direct effect on resilience, significant at the 99 percent level. As this distance increases by one standard deviation, economic resilience within the county will also increase by 0.146 standard deviations from the mean.
- Poverty has a negative direct influence on resilience, at the 99 percent level. As the percentage of the population who live in poverty increases by one standard deviation, the economic resilience of the county will decrease by -0.086 standard deviations from the mean.

Table 6: Comparison of direct effects and OLS results with beta estimates

Variables	OLS results	Direct effect
Demographic/mobility		
Age 25 to 44	0.099**	0.098**
Age 65 and up	-0.033	-0.013
Ethnic Diversity	0.086***	0.070
Mobility In-Migration	0.119***	0.124***
Mobility Out-Migration	-0.089***	-0.082***
Mobility In-Commuting	0.058**	0.061***
Mobility Out-Commuting	0.014	0.017
Residence Born	0.004	0.021
Population	0.279***	0.291***
Land Area	-0.032	-0.037
College	0.107**	0.127***
Economic/industry		
Distance to City	0.147***	0.146***
Business Density	0.036	0.032
Self-Employment	0.007	0.014
Poverty	-0.111***	-0.086***
Participation	0.085**	0.077**
Innovation Potential	0.060**	0.068**
Industry Diversity	0.092*	0.081***
Knowledge Diversity	-0.051**	-0.045
Farming	0.059	0.061***
Oil & Gas	0.044	0.048
Coal	-0.063***	-0.051***
Manufacturing	-0.030	-0.010
Community/health		
Primary and Secondary	-0.007	-0.011
Community College	-0.026*	-0.020
Broadband	-0.035	-0.031*
Child/Elder Care	0.004	-0.017
Health Practitioner	-0.095***	-0.083***
Recreational Opportunity	-0.022	-0.013
Natural Amenity	0.006	0.010
Social Capital	0.004	-0.012
Federal Funds	-0.008	-0.002
Voting Competitiveness	-0.007	0.014
Agritourism	0.016	0.012
Direct Farm Sales	0.027*	0.009
Constant	***	-
Adjusted R ²	0.2577	0.2410

Note: Significance levels: different from zero at *10%, **5%, and ***1% or lower.

The ρ value for the SDM, which identifies spatial dependence within these county-level data, is statistically significant at the 99 percent level (see Table 7). This suggests that estimation with the spatial econometric model is appropriate. Because ρ is positive, our model identifies that economic activities or policies in county i that influence resilience have a similar spillover in county j .

A spatial weight matrix of six nearest neighbors produced the largest maximum likelihood value. This means the spatial dependence of a county extends to the six closest, neighboring counties. Distance between counties is based upon the distance between the central locations of each county, known as a centroid. The

SDM incorporates a global effect by allowing for a “ripple effect” from changes at a single county level, which impacts six neighboring counties, each of which also impacts six neighboring counties, and so on.

For the estimation of county-level resilience, spatial econometric models provide a number of advantages in interpretation and discussion compared to the OLS regression model. Economic resilience is not just a county-level phenomenon. For example, a change in one county’s ability to generate economic resilience through policies that impact the magnitude of a variable (such as an increased college-educated population) will have a multi-county response. Spatial econometric models account for the observed spatial dependence within these data. In addition, based on the direct, indirect, and total effect estimates, we can identify policy issues that are most appropriately addressed as local issues (those with minor spillover effects) versus those that are best addressed as regional or statewide issues (those with large spillover effects).

Based on the signs of the direct and indirect coefficients, we can also identify variables that provide either competitive or cooperative strategies. Competitive strategies impact independent variables that have the opposite signs for direct and indirect coefficient estimates. In other words, the strategy in county i would promote resilience in county i , while detracting from resilience in county j . Cooperative strategies impact independent variables that have the same coefficient signs for both direct and indirect coefficients. These strategies have the same influence on resilience both within and outside a county.

3.3 Results: Important indirect effects and total effects estimates

Table 7 presents the results of the spatial econometric model. The magnitude of these coefficient estimates (positive and negative) are ranked in Table 8. The following discussion provides our interpretation of the estimated coefficients for the statistically significant variables in each category.

3.3.1 Demographic/Mobility variables

The characteristics of a county’s population influence its resilience. Population size has the largest positive direct and total effects on resilience plus the second-largest indirect effect (both statistically significant at the 99 percent level). As the population increases within a county, the county itself, as well as counties in the surrounding region, will increase in resilience. Thus, on average, larger populations promote greater resilience.

The age distribution of the population also influences a county’s resilience level. The percentage of population age 25 to 44 has a positive direct effect, while the indirect and total effects are negative, although the total effect is the smallest of all negative coefficients. As this portion of the population increases within a county, the resilience of that county will increase. However, attraction of younger workers to county i causes declines in resilience within surrounding counties as well as the total regional effect. This impact might be explained by a competitive effect of businesses and firms being more likely to locate in proximity to the 25-to-44-year-old segment of the workforce. The percent of population age 65 and up has the largest negative indirect and total effects (significant at the 99 percent level); as the older population increases within a county, resilience of nearby counties and the total region decreases. Lastly, the educational attainment of the population also influences a region’s resilience. College education among the population has a positive direct effect but a negative indirect effect on resilience (both significant at the 99 percent level). As the percent of the population with a bachelor degree or higher increases within a county, the resilience of that county increases while the resilience of surrounding counties decreases. Thus, county-level strategies that attract more of a college-educated population are competitive with the economic resilience of surrounding counties.

Table 7: Spatial econometric regression estimate results for economic resilience

Variable	Direct		Indirect		Total	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Demographic/mobility						
Age 25 to 44	0.098	6.308***	-0.148	-6.427***	-0.050	-1.661*
Age 65 and up	-0.013	-0.333	-0.296	-2.906***	-0.309	-2.834***
Ethnic Diversity	0.070	1.507	0.074	0.616	0.144	1.142
Mobility In-Migration	0.124	4.724***	0.054	0.946	0.178	3.077***
Mobility Out-Migration	-0.082	-3.147***	-0.127	-2.058**	-0.209	-3.211***
Mobility In-Commuting	0.061	2.767***	0.118	1.979**	0.179	2.724***
Mobility Out-Commuting	0.017	0.683	-0.290	-4.376***	-0.273	-3.694***
Residence Born	0.021	0.712	0.064	0.727	0.085	0.887
Population	0.291	10.425***	0.394	6.471***	0.685	11.015***
Land Area	-0.037	-0.628	-0.084	-0.580	-0.122	-0.774
College	0.127	4.989***	-0.125	-2.599***	0.002	0.042
Economic/industry						
Distance to City	0.146	4.462***	0.016	0.190	0.162	1.848*
Business Density	0.032	0.662	0.103	1.524	0.135	3.129***
Self-Employment	0.014	0.398	0.010	0.115	0.025	0.258
Poverty	-0.086	-3.627***	-0.201	-2.758***	-0.287	-3.622***
Participation	0.077	2.177**	0.021	0.236	0.098	1.051
Innovation Potential	0.068	2.047**	-0.051	-0.568	0.017	0.180
Industry Diversity	0.081	3.410***	-0.002	-0.031	0.079	1.031
Knowledge Diversity	-0.045	-1.006	0.109	0.885	0.064	0.482
Farming	0.061	2.909***	0.521	8.572***	0.582	8.606***
Oil & Gas	0.048	1.356	0.053	0.633	0.101	1.116
Coal	-0.051	-2.844***	-0.042	-1.025	-0.092	-2.161**
Manufacturing	-0.010	-0.590	-0.078	-1.758*	-0.089	-1.850***
Community/health						
Primary and Secondary	-0.011	-0.529	0.029	0.507	0.018	0.289
Community College	-0.020	-1.007	-0.104	-2.033**	-0.124	-2.236**
Broadband	-0.031	-1.723*	-0.045	-0.889	-0.075	-1.367
Child/Elder Care	-0.017	-0.750	-0.051	-0.917	-0.069	-1.166
Health Practitioner	-0.083	-4.419***	-0.102	-1.877*	-0.185	-3.175***
Recreational Opportunity	-0.013	-0.539	-0.118	-1.647*	-0.132	-1.657*
Natural Amenity	0.010	0.454	0.105	1.691*	0.116	1.698*
Social Capital	-0.012	-0.341	-0.063	-1.104	-0.075	-1.439
Federal Funds	-0.002	-0.052	0.040	0.511	0.038	0.469
Voting Competitiveness	0.014	0.584	-0.090	-1.574	-0.076	-1.276
Agritourism	0.012	0.582	0.042	0.947	0.053	1.195
Direct Farm Sales	0.009	0.539	-0.190	-3.795***	-0.181	-3.256***

Note: Significance levels: Different from zero at 10%*, 5%***, and 1% or lower***. Spatial Durbin Model, six nearest neighbors. Dependent variable = Resilience. $R^2 = 0.2585$. $Rbar^2 = 0.2410$. $\sigma^2 = 0.7222$. log-likelihood = -2786.655. Nobs, Nvars = 3,049, 71. $p = 0.220$ ***.

Four variables measuring mobility are included within this analysis: in-migration, out-migration, in-commuting, and out-commuting. In-migration has positive direct and total effects (significant at the 99 percent level). As more people migrate to a county, resilience of the county and the surrounding counties increases. As communities create places where people want to live, the populations of these communities will increase, as will the resilience. Conversely, out-migration has negative direct, indirect, and total effects on resilience (direct and total significant at the 99 percent level). As people leave a county, presumably for jobs and economic opportunities elsewhere, resilience declines throughout the entire region. Thus, out-migration has negative impacts on the resilience for the county, surrounding counties, and the region as a whole.

Table 8: Ranked order of positive and negative impacts of statistically significant SDM beta coefficients

Direct		Indirect		Total	
Positive	Negative	Positive	Negative	Positive	Negative
Population	Poverty	Farming	Age 65 and up	Population	Age 65 and up
Distance to City	Health Practitioner	Population	Mobility Out-Commuting	Farming	Poverty
College	Mobility Out-Migration	Mobility In-Commuting	Poverty	Mobility In-Commuting	Mobility Out-Commuting
Mobility In-Migration		Natural Amenity	Direct Farm Sales	Mobility In-Migration	Mobility Out-Migration
Age 25 to 44	Coal				
	Broadband		Age 25 to 44	Distance to City	Health Practitioner
Industry Diversity			Mobility Out-Migration	Business Density	Direct Farm Sales
Participation			College	Natural Amenity	
Innovation Potential			Recreational Opportunity		Recreational Opportunity
Farming			Community College		Community College
Mobility In-Commuting			Health Practitioner		Coal
			Manufacturing		Manufacturing
					Age 25 to 44

Note: Variables are listed from highest to lowest impact.

In-commuting mobility has positive direct, indirect, and total effects on economic resilience (significant at the 99 percent level). As the number of people who commute into a county for employment increases, the resilience of the entire region also increases. An increase in the number of in-commuters will increase participation in the local economy. High in-commuting levels also indicate a “wealthy” region, full of employment opportunities and other economic resources. Out-commuting has statistically significant negative indirect and total effects on resilience (significant at the 99 percent level). As out-commuting increases from the county, the resilience of the surrounding counties and the total region decreases. One explanation for this outcome may be that employment levels in counties surrounding those counties with high percentages of out-commuting did not rebound to the same level after the Great Recession because people commuting from out of the county for employment are less likely to return to employment in surrounding counties after the recession receded.

3.3.2 *Economic/Industry variables*

The regional placement of the county as well as its poverty rate and business density all influence the resilience of a county. As the distance to a large city increases, the resilience of a county and the total region increases. This result contrasts with the estimated positive coefficient for the population variable. An increase in business density in a county has a positive impact on the resilience of the entire region (statistically significant at the 99 percent level). The indirect effect is three times larger than the direct effect, so that this variable has a larger impact on a regional basis compared to a county basis. Poverty has the largest negative direct effect, the third-largest indirect effect, and the second-largest total effect (each

statistically significant at the 99 percent level). The portion of the population in poverty within a county has an important influence on the resilience of the entire region. As poverty increases in a county, the resilience of the county, its surrounding counties, and the entire region will decrease.

The industry composition of a county also reflects its resilience. Farming, coal, and manufacturing employment each have statistically significant effects. Employment in farming has positive direct, indirect, and total effects (each statistically significant at the 99 percent level). As farming employment grows in a county, resilience of that county, surrounding counties, and the total region will increase. Farming employment has a unique effect on resilience. Farming has a very small positive direct effect at the county level; however, it increases resilience in the counties of the entire region by a magnitude of over nine times greater than for the county itself (the largest positive indirect effect). Employment in the coal industry has a negative direct effect (statistically significant at the 99 percent level) and total effect (statistically significant at the 95 percent level). As employment in the coal industry increases in a county, resilience of the entire region will decrease. Manufacturing employment has slightly negative indirect and total effects (statistically significant at the 90 percent level). As manufacturing employment increases within a county, resilience for the surrounding counties and total region decreases slightly, as the coefficients are small.

3.3.3 *Community/Health variables*

Community and health variables influence resilience at both the county and regional levels. Variables reflecting employment opportunities that support the community and the natural resource base within a community have statistically significant effects. Employment in community colleges has negative indirect and total effects (statistically significant at the 95 percent level). Employment increases in community colleges may reflect the fact that more of the population in surrounding counties is continuing their education instead of entering the workforce. Employment in healthcare has negative direct, indirect, and total effects (statistically significant at the 99 percent level for direct and total effects). If a county has a higher level of employment in the healthcare practitioner field, this may reflect that the county and surrounding county populations are less healthy, creating a lower percentage of the population being employed. Thus, while counties may observe the economic gains of providing health care services, the employment losses associated with more people using health care services is not as readily observed.

Employment in arts, entertainment, and recreation has negative indirect and total effects on resilience (significant at the 95 percent level). As recreation opportunities increase in a county, resilience in the surrounding counties and the entire region decreases. While these results are difficult to explain, recreational employment tends not to be particularly stable due to the seasonality of these occupations. After a recession, employment levels within this industry may not rebound as well as other industries. Conversely, natural amenities have positive indirect and total effects on resilience. A county with high quality natural amenities provides positive spillover effects on the surrounding counties and total region resilience. Thus, preservation of natural amenities within a county is important to resilience of a larger region. Direct farm sales have negative indirect and total effects (statistically significant at the 99 percent level). As direct farm sales increase within a county, resilience of surrounding counties and the total region decrease. Thus, any resiliency benefits of direct farm sales tend to stay within the host county, though not at a statistically significant level.

Direct farm sales do have negative spillover effects in surrounding counties. However, this variable does not indicate the size of the farming industry in a county. This variable reflects the average farm sales value per farm. Counties surrounding large metropolitan areas tend to have a higher value of direct farm sales than counties in predominantly rural areas. Thus, these coefficient estimates may reflect metropolitan location rather than direct farm sales themselves.

3.4 County relationships and policy strategies

The OLS results only examine the impact of county-level variables on economic resilience within their own county. However, a spatial econometric model provides a multi-dimensional analysis that explores county-level variable impacts on their own plus neighboring counties' resilience.

When making policy recommendations based on the observed variables, one must consider that a policy implemented in a given county may impact surrounding counties. While certain policies are best dealt with as single-county issues, others may be more efficiently implemented as a joint effort with surrounding counties (or even at the state level). The variables impacting resilience may also point to different strategies needed to address a policy issue. Based on the results of the spillover analysis, policies may be complementary (cooperative) or competitive across county lines. Cooperative strategies strengthen the resilience of surrounding counties, while competitive strategies weaken their resilience.

3.4.1 *Local or strictly county-level impacts*

Variables such as the labor market participation rate, potential for economic innovation, and industrial diversity all have positive direct effects on resilience at the county level only (see Table 9). These approaches neither help nor hurt resilience in neighboring counties. These variables support the best strategy and practice of **moving multiple sectors forward for economic development** discussed in the qualitative analysis. Policymakers can take county-level approaches without the concern of how these policies will affect the surrounding regions.

3.4.2 *Cooperative regional policy strategies*

Based on our results, we identify two types of multi-county policy approaches: cooperative and altruistic-cooperative (see Table 9). Cooperative policy strategies include variables with statistically significant coefficients for direct and indirect effects that have the same signs. Policies in this classification include those that increase population, decrease poverty, and reduce out-migration. If we take the best practice from the qualitative analysis of **engaging the community over the long-term**, as poverty is alleviated, resilience will be promoted both within a county and in surrounding counties.

Altruistic-cooperative policies include variables with statistically insignificant direct effects but statistically significant positive coefficients for the indirect and/or total effects. Policies in this classification include those that protect or enhance natural amenities, increase the number of businesses per capita, and increase farm employment. **Identifying and growing the assets in the community and region** is listed as a best practice within the qualitative analysis; however, amenities have a stronger regional impact on economic resilience than a county-level impact. Thus, uniqueness should be viewed more broadly than solely at the county level.

Cultivating entrepreneurs and developing resources for business start-ups is also listed as one of the best practices in the qualitative analysis; however, cultivating businesses in a community is beneficial for economic resilience of surrounding counties, too. Farming is included in the altruistic-cooperative category due to its very small (although statistically significant) direct effect, but very large indirect and total effects.

Growing value chains is one aspect of another best practice identified in the qualitative analysis. Farming employment has a stronger effect as a regional market than as a market just at the county level.

If county-level policy makers take an isolated approach to these altruistic-cooperative policy issues, the county will not receive measurable benefits from these policies, according to our model. Thus, regional or statewide approaches are most appropriate when focusing on these strategies to improve resilience.

3.4.3 Competitive regional policy strategies

Based on our model results, we can identify two levels of competitive strategies: competitive and ultra-competitive (see Table 9). Competitive policy strategies include variables with statistically significant coefficients for direct and indirect effects with opposite signs. Policies within this classification include those that relate to or affect the percent of population age 25 to 44 as well as the percent of population with a college degree. **Growing youth engagement and next generation leadership** is another best practice identified in the qualitative analysis. As counties seek to attract these people, who are highly engaged in the workforce, the resilience of the county will increase. However, the resilience of surrounding counties and the total region will decline, according to our model.

Ultra-competitive strategies include variables with statistically insignificant coefficients for direct effects but statistically significant negative coefficients for indirect or total effects. Strategies within this classification include those that increase the amount of elderly population, increase direct farm sales, increase recreational opportunity, and increase employment at community colleges and manufacturing facilities.

Table 9: Policies categorized by impact and implications for surrounding counties

Strictly county-level impacts	Regional-level impacts			
	Cooperative	Altruistic-cooperative	Competitive	Ultra-competitive
Policies that increase the diversity of industries and innovation potential	Policies that increase county population size	Policies that protect or enhance natural amenities	Policies that attract college-educated people	Policies that increase the portion of the population age 65+
Policies that increase participation of the workforce	Policies that decrease the poverty rate	Policies that increase the number of businesses per capita within a county	Policies that attract younger workers (25 to 44)	Policies that encourage direct farm sales
	Policies that reduce the out-migration of county level population	Policies that increase farm employment		Policies that increase the employment in the arts, entertainment, and recreation
				Policies that increase community college employment
				Policies that increase manufacturing employment

Note: Strictly county-level impacts include variables with statistically significant coefficients for direct effects but no indirect or total effects. Cooperative impacts include variables with statistically significant coefficients for direct and indirect effects with the same signs. Altruistic-cooperative impacts include variables with statistically insignificant coefficients for direct effects but statistically significant positive coefficients for indirect or total effects. Competitive impacts include variables with statistically significant coefficients for direct and indirect effects with opposite signs. Ultra-competitive impacts include variables with statistically insignificant coefficients for direct effects but statistically significant negative coefficients for indirect or total effects. "Policies that increase farm employment" is included in the altruistic-cooperative category due to its very small (although statistically significant) direct effect but very large indirect effect.

3.5 Identification of highly resilient counties

Highly resilient counties are identified based on the residual values estimated for each county from the analysis of the SDM. Residual values are calculated as the difference between observed resilience value and the predicted resilience from the SDM. Counties with a positive residual greater than 2.5 standard deviations from the mean are identified as highly resilient. The SDM identified 72 counties across the United States that over-performed with high levels of resilience; Table 10 ranks the top fifteen of these 72 counties. Over half of these counties are from North Dakota and Texas, where employment was significantly impacted by the expansion of shale oil and gas production.

Of the 72 counties identified as highly resilient, five are located within the Appalachian Region. Table 11 ranks these counties based on the highest residual value. Three of the five counties are located within West Virginia.

Table 10: Top 15 highly resilient counties based on residual values

County	FIPS	Resilience	Residual	Appalachian Region
Dunn, ND	38025	1.48	6.76	No
Grant, OK	40053	1.30	6.44	No
Fairfield, SC	45039	1.28	6.02	No
Twiggs, GA	13289	1.25	5.99	No
Karnes, TX	48255	1.31	5.92	No
Williams, ND	38105	1.42	5.60	No
Dimmit, TX	48127	1.17	5.20	No
Mountrail, ND	38061	1.27	5.10	No
Rockwall, TX	48397	1.31	4.85	No
Lyon, IA	19119	1.16	4.80	No
McKenzie, ND	38053	1.32	4.77	No
Custer, NE	31041	1.12	4.74	No
Kendall, TX	48259	1.27	4.63	No
Cameron, LA	22023	1.11	4.35	No
Kemper, MS	28069	1.08	4.24	Yes

Table 11: Most-resilient counties in the Appalachian Region

County	FIPS	Resilience	Residual
Kemper, MS	28069	1.08	4.24
Doddridge, WV	54017	0.90	3.10
Bledsoe, TN	47007	0.85	2.24
Monongalia, WV	54061	0.84	2.22
Taylor, WV	54091	0.83	2.22

4. QUALITATIVE ANALYSIS OF RESILIENCE

Our qualitative analysis of resilience included interviews, a focus group, an Advisory Team, and a survey (see Figure 5).

An extensive literature review for the qualitative analysis was conducted from November 2016 through January 2017 to highlight potential best practices, strategies, and possible case studies for the project, which were shared with project team members.

These suggestions were then presented to the Advisory Team for the project on its first call on February 6, 2017 for feedback and idea generation, which is available in Appendix C. Feedback was also shared via email both before and after the Advisory Team call.

Initial interviews were held by phone between January and March 2017. While interviews were confidential and all results kept anonymous, summaries were drafted from each interview. Then, initial best practices and strategies were developed as key themes emerged from the interviews and were highlighted in the Interview Summary. The Interview Summary was shared with interviewees and Advisory Team members at the conclusion of the interview process. Appendix B summarizes the ideas from the interviews under the themes:

- best practices and related strategies,
- tools,
- resources,
- points of inspiration,
- challenges,
- guidebook format Ideas,
- ideas of others to reach out to, and
- potential case study locations.

Appendix B also includes a list of interviewees and interview questions. Initial interviewees were selected with project team and ARC feedback to represent a balanced variety of backgrounds, affiliations, geographies, experiences, and knowledge sets. Interviewees for the second round of interviews were selected based on focus group feedback, with the goal of rounding out the initial list of interviewees for background and sector representation.

A focus group meeting was then held with key thought leaders in Appalachia, including Advisory Team members, in April 2017 to solicit feedback on the draft best practices and strategies, with both video and in-person meeting participation options (the meeting was held in Duffield, Virginia, at the LENOWISCO Planning District Commission office). Appendix A includes a summary of the focus group meeting and a copy of the presentation that was shared during the focus group, with initial qualitative and quantitative findings. Focus group participants provided extensive feedback during the meeting as well as following the meeting via email and phone, which largely confirmed the draft best practices and strategies. One new best practice was added, and two were combined. In addition, focus group participants suggested that additional interviews be conducted with key sectors.

Next, a second round of interviews were held in April and May 2017 to vet the draft practices and strategies, gather additional feedback, and continue to refine the initial best practices and strategies.

Finally, a practitioner survey was shared in late May through early June 2017 with practitioners across the Appalachian Region to prioritize the draft best practices and strategies and solicit new ideas. A total of 151 responses were received from across the region. The survey is shown in Appendix D. Survey responses confirmed the draft best practices and strategies identified by the qualitative team and highlighted several specific ideas and needs.

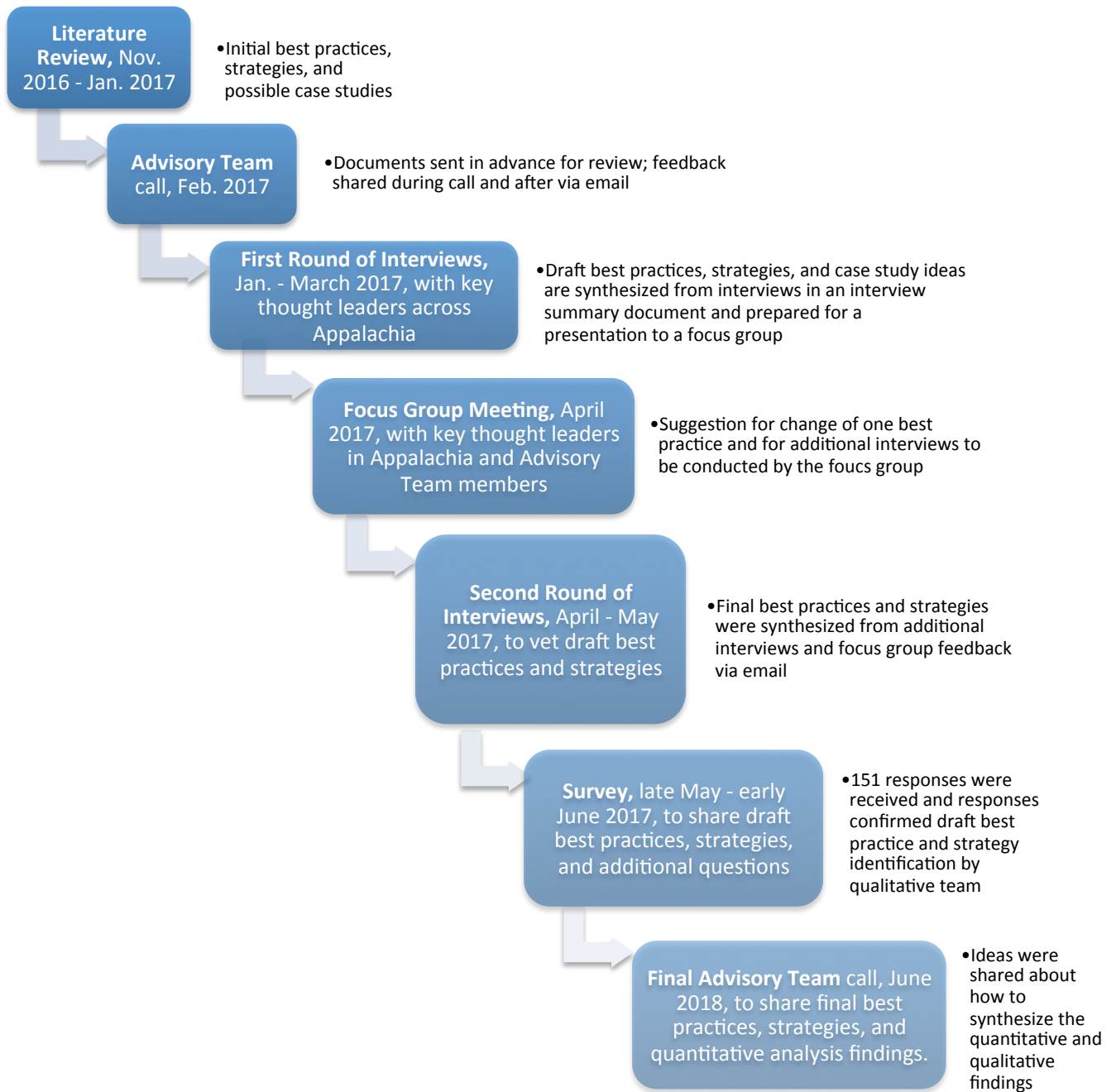
A final Advisory Team call was held in June 2018 to share final best practices, strategies, and quantitative analysis findings, and ideas were shared about how to synthesize the quantitative and qualitative findings. Appendix C summarizes this Advisory Team call.

Results from the aforementioned steps were synthesized into eight best practices for growing economic resilience in the Appalachian Region:

1. Invest in education, technology, infrastructure, and broadband.
2. Engage the community over the long term.
3. Create communities where people want to live.
4. Grow youth engagement and next-generation leadership.
5. Identify and grow the assets in the community and region.
6. Build networks and foster collaboration.
7. Move multiple sectors forward for economic development and grow value chains.
8. Cultivate entrepreneurs and develop resources for business start-ups.

The guidebook, a companion report to this technical report, expands upon each of these best practices with prioritized strategies, highlights, case studies, and economic strategies.

Figure 5: Summary of qualitative research activities



5. CASE STUDY SELECTION

The guidebook produced for this project includes, among other things, 10 case studies. Selection of these case studies was informed by the qualitative and quantitative analyses, as well as best professional judgment from the project team and ARC staff.

Case study selection was an iterative process. In total, the three prongs of the resilience study resulted in a list of 112 candidate counties⁷ for case studies.

The team then developed a system of review through which this number could be reduced. The research team, with input from ARC staff, established general criteria for case study selection. Ideal case study areas would:

- be identified as highly resilient from one or both of the quantitative economic analyses;
- be suggested by multiple interviewees in the qualitative analysis;
- have a high degree of applicability to the Appalachian Region;
- ideally, exhibit collaborative planning for economic development and/or community development; and/or
- relate to multiple best practices and/or strategies;

The quantitative research teams independently evaluated their respective results and engaged in cursory research to select candidates from their top results. Many counties were removed at this stage based on best professional judgment. These counties were removed for several reasons, but largely if the high resilience of the area was due to:

- factors largely inapplicable to Appalachia,
- non-repeatable factors, or
- a single, large economic development project that occurred at precisely the correct point in time to influence that county's outcome in the analysis.

Twenty-four highly resilient counties were identified based on their resilience value result from the OLS model (see Table 12). These counties were considered for inclusion as case studies. Appendix H shows employment charts for these 24 counties.

As shown above in Table 5, another set of 24 counties were identified based on their high residuals in the OLS model. The resilience exhibited by these counties was greater than expected by the model. Appendix G shows employment charts for these 24 counties. These counties were also considered for inclusion in the case studies. Some of the highly resilient counties identified in Table 12 also have high residuals and are included in Table 5.

⁷ Multiple scales—towns, counties, or groups of counties—were considered for case study selection. Ultimately, nine of the selected case studies are counties, and one is a two-county area.

Figure 6: The 112 candidate case study counties

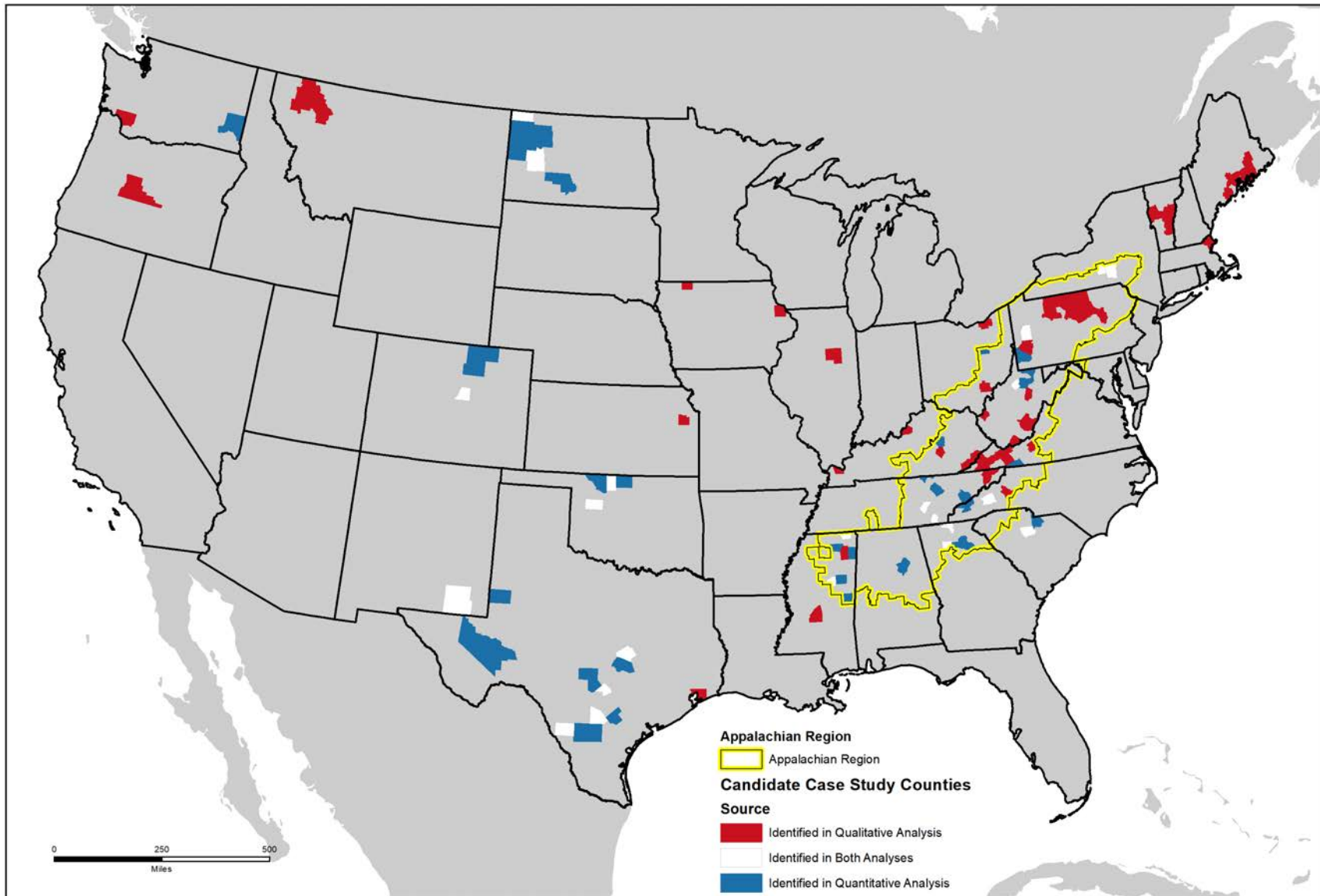


Table 12: Top 24 counties based on resilience in the OLS model

County	Population (2015)	Resilience	Net growth	Dominant sector in recovery	Sector growth	Percent of job growth accounted for by this sector
Kemper, MS	10,551	1.08	1,206	Construction	909	75.4%
Swain, NC	13,463	0.91	2,801	Local government	2,473	88.3%
Doddridge, WV	7,808	0.90	402	Natural resources & mining	183	45.5%
Jackson, GA	50,607	0.90	7,675	Trade, transportation, & utilities	3,389	44.2%
Bledsoe, TN	12,685	0.85	1,056	N/A	N/A	N/A
Monongalia, WV	88,424	0.84	9,033	Education & health services	2,318	25.7%
Taylor, WV	16,318	0.83	459	N/A	N/A	N/A
Holmes, OH	41,630	0.81	3,781	Manufacturing	1,939	51.3%
Union, MS	26,569	0.81	3,127	Manufacturing	1,939	62.0%
Bradley, TN	93,024	0.81	9,133	Professional & business services	2,084	22.8%
Harrison, WV	67,989	0.79	2,088	Education & health services	959	45.9%
Morgan, TN	20,959	0.78	424	N/A	N/A	N/A
Forsyth, GA	137,643	0.77	19,190	Professional & business services	3,986	20.8%
Madison, KY	78,732	0.76	6,349	Manufacturing	2,077	32.7%
Washington, PA	205,359	0.76	9,491	Professional & business services	3,642	38.4%
Butler, PA	179,522	0.76	7,908	Professional & business services	2,412	30.5%
Sevier, TN	81,275	0.76	9,022	Leisure & hospitality	5,554	61.6%
Chenango, NY	51,154	0.75	2,773	Manufacturing	1,648	59.4%
Oktibbeha, MS	43,985	0.75	3,161	Leisure & hospitality	1,278	40.4%
Buncombe, NC	221,642	0.75	18,048	Education & health services	4,856	26.9%
Cherokee, GA	182,128	0.75	12,677	Trade, transportation, & utilities	3,314	26.1%
Hall, GA	160,979	0.74	14,859	Manufacturing	4,697	31.6%
Pickett, TN	4,997	0.74	248	Trade, transportation, & utilities	144	58.1%
St. Clair, AL	72,596	0.73	3,331	Manufacturing	1,504	45.2%

Source: USDL (2015). Note: The data is not seasonally adjusted.

Other candidate counties for further study from the OLS model are those that have a high residual and also have high self-employment shares. The top six such counties are shown in Appendix I. Four of these six counties were already identified as having high resilience and/or high residuals. Two counties—Fannin, GA and Alcorn, MS—were not previously identified.

Table 10, above, lists the top 15 highly resilient counties identified in the SDM based on residual values.

As illustrated in Table 13, 53 areas were identified in the qualitative research. Most of these areas include single counties, but several, such as the Pennsylvania Wilds area in Pennsylvania, are multi-county areas.

Table 13: Potential case study areas identified in the qualitative research

	County
1	Elkhart, IN
2	Jacksonville, FL
3	British Columbia
4	East Central VT (Addison, Orange, Rutland (particularly), Windsor counties)
5	Southwest VA (Wise, Russell, Scott, Tazewell counties; towns of Wise and Norton)
6	Athens County, OH
7	Chattanooga, TN
8	Coastal Fisheries, ME (York, Cumberland, Sagadahoc, Lincoln, Knox, Waldo, Hancock, Washington counties)
9	Pennsylvania Wilds, PA (counties of Cameron, Centre, Clarion, Clearfield, Clinton, Elk Forest, Jefferson, Lycoming, McKean, Potter, Tioga, and Warren)
10	Rutland, VT
11	Beckley, WV
12	Morganton, NC
13	Mingo County WV
14	Gilbert, WV
15	Asheville, NC
16	Greenbrier, WV
17	Eastern KY Counties (especially the town of Whitesburg)
18	Fayetteville, WV
19	Charleston, WV
20	Huntington, WV
21	Tri-Cities: Johnson City, TN, Bristol, TN, and Kingsport, VA
22	Danville, PA
23	Bloomsburg, PA
24	Columbia, PA
25	Ohiopyle, PA
26	Fayette County, PA
27	Tupelo, MS
28	Oxford, MS
29	Florence, MS
30	Mussell Shoals, MS
31	Bucksport, ME
32	Dickinson County, IA
33	Cleveland, OH
34	Sparksville, MO
35	Columbus, MO
36	Roanoke, VA
37	Blacksburg, VA
38	Louisville, KY
39	Marion, VA
40	Moorehead, MN
41	Belfast, ME
42	Damariscotta, ME
43	Pittsburgh, PA
44	Rock Castle County, KY
45	Lawrence, KS
46	Beckwith County, KS
47	Buckhannon, WV
48	Grafton, WV
49	Wheeling, WV
50	Williamson, WV
51	Princeton, WV
52	Fairmont, WV
53	Bellingham, WA

We also categorized each county according to its pattern of total employment across the time period of concern (2000-2016), with an emphasis on how employment responded to the Great Recession. This created a consistent baseline upon which to consider the resilience of these communities and, paired with the quantitative definition of resilience, offered an opportunity to quickly remove those counties that did not meet the criteria of being identified as resilient. Our categorical breakdown of counties was as follows:

- A. No employment shock or very minimal employment shock in 2008
- B. Employment decline pre-dating 2008
- C. Shock in employment evident in 2008, no employment recovery since
- D. Shock in employment evident in 2008, recovery evident since

Those counties in Category D were of particular interest to the research team, because they most clearly exhibited evidence of recovery following a shock. Those counties with serious employment decline and no subsequent recovery (Category C) were effectively removed as case study candidates at this point, as were those counties in Category B. At this time, no Category A counties were included as prospective case study counties.

After narrowing down the list of counties based on the factors described above, 40 of the original 112 candidate counties remained. We then engaged in a deeper research effort on the remaining 40 counties, wherein we more carefully examined all available data. We reviewed the model variable data and, where available, draft case study information drafted by the qualitative team. We researched conditions that might support or negate the inclusion of these counties, based on the case study criteria. This effort allowed us to quickly discount a number of counties based on outlier conditions, such as evidence that economic recovery was tied to the opening of a single, large employer such as a prison or power plant. These entities, while valuable for employment, are not generally repeatable or applicable to other geographies and are outside the aim of the best practices. We looked specifically for evidence of intentional economic and/or community planning that reflected recommended best practices, as well as existing conditions that reflected those best practices.

The research team convened to review this analysis and make recommendations on next steps. A strong case was made by several research team members to more closely examine a number of other counties—especially a number of those within Category A (no employment shock or very minimal employment shock in 2008). For all categories, if the independent research of any team members resulted in a strong case for inclusion of counties from Categories A, B, or C, those counties were included in subsequent research. A small number of Category B and C counties were also added in this manner. Team members recommended specific counties as well as some revisions to the review methodology and we engaged in a secondary round of research.

The second round of research specifically addressed many of the case study selection criteria and included 41 counties; this included 14 additions to, and 13 deletions from, the previous list of 40 counties.

In this phase, certain counties were included if we thought that the county was poised to become economically resilient. These counties, which we refer to as “cusp communities” in the selection criteria, were also considered as candidates for place-based examples in the guidebook. These areas may have all the factors in place to become resilient in the coming 4-6 years, but may not have achieved a level of resilience that warrants considering them as full case study locations.

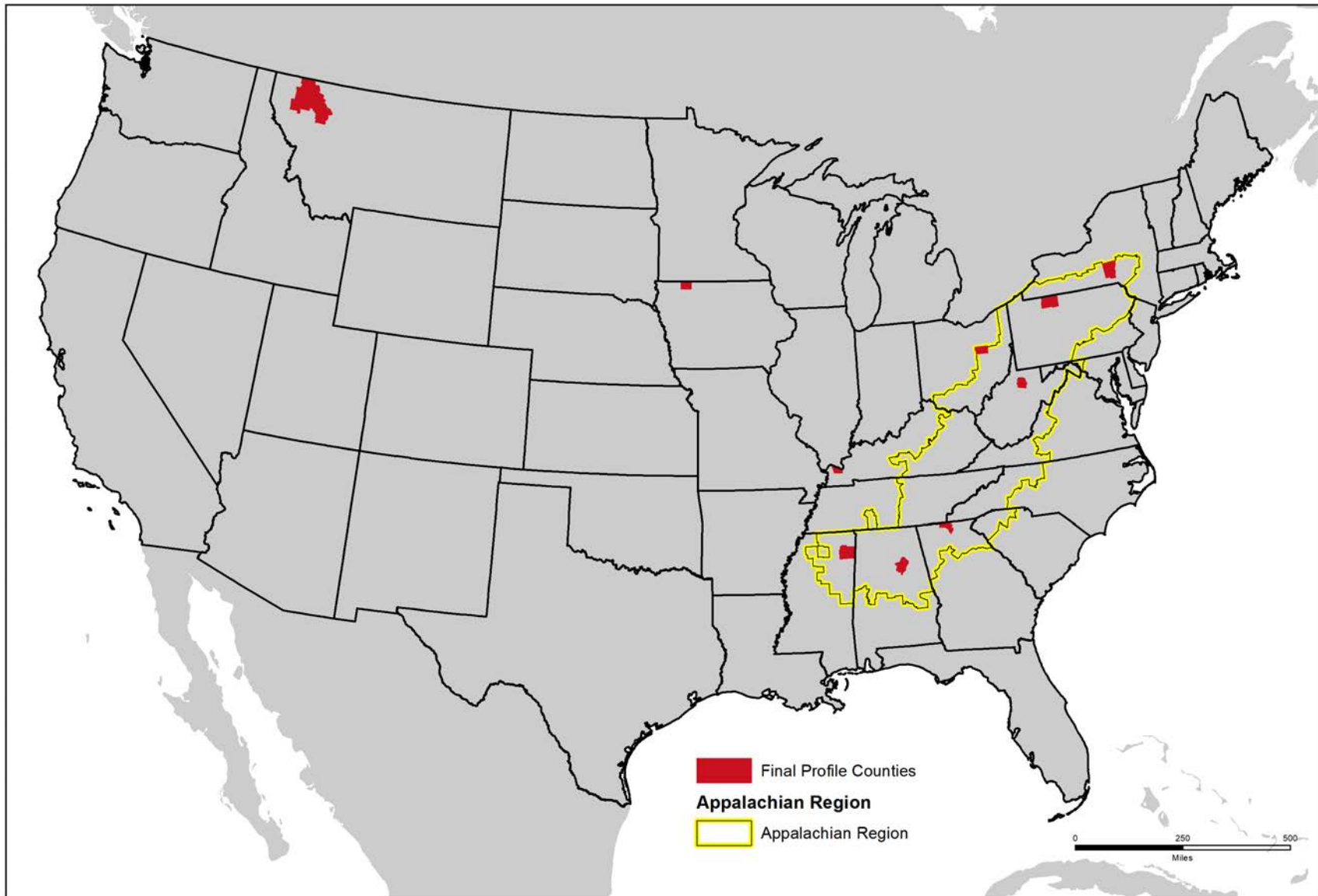
Based on best professional judgment, the project team then narrowed the list to the strongest 32 candidate counties and provided all review information as well as interactive web map to ARC staff for review.

ARC staff selected the final group of case studies after careful consideration of materials provided to them by the research team about the candidate counties, which included results of the quantitative analysis as well as background information. The staff members at ARC weighed the following factors while determining the locations of the case studies:

- 1) results of the quantitative model measuring economic resiliency;
- 2) historical context about the community, such as information about the specific employment shock and recovery efforts;
- 3) socioeconomic characteristics of the communities;
- 4) geographic coverage throughout the Appalachian Region; and
- 5) if outside of Appalachia, whether the community is relatable—and whether lessons learned would be applicable—to the Region.

Based on these quantitative and qualitative considerations, ARC staff selected a diverse and balanced group of case study locations (see Figure 7 and Table 14). Because the Appalachian Region, which spans 13 states and is home to more than 25 million people, is heterogeneous in nature, the goal was to select a set of locations diverse enough so that most—if not all—communities throughout the Region would be able to identify with the experiences of the case studies.

Figure 7: The ten case study areas



These case study areas include four counties considered due to their modeled resiliency from the OLS model and five counties considered due to their residuals from the OLS model. None of these final case study areas were sourced from the SDM. Four of the final case study counties were identified in the qualitative research, and one other (Flathead, MT) was added based on input from ARC staff.

Table 14: The ten case study counties

County(ies)	FIPS	High resilience (OLS)	High residual (OLS)	Qualitative?	Cusp?
Dickinson, IA	19059			X	No
Fannin, GA	13111		X		Maybe
Flathead, MT	30029				Maybe
St. Clair, AL	01115	X			No
McCracken, KY	21145			X	Yes
Holmes, OH	39075	X	X		No
Chenango, NY	36017	X	X		No
Harrison, WV	54033	X	X		No
McKean, PA	42083			X	Maybe
Lee and Itawamba, MS	28081, 28057		X	X	Yes

The guidebook, which is the second report for this project, includes detailed descriptions of each of the 10 case study areas.

6. CONCLUSION

In this project, we applied integrated quantitative and qualitative research to identify policies, best practices, and associated strategies for growing economic resilience in the Appalachian Region.

The first quantitative analysis, a conventional OLS analysis, assesses each county across the United States in isolation. The second, a spatial econometric model, extends the first model by allowing for spillovers of economic processes across county lines. Both of these analyses investigate the same set of 35 variables.

The qualitative research included interviews, a focus group, an Advisory Team, and a survey. It grounded the statistical results with information from practitioners.

Results were synthesized into eight best practices for growing economic resilience in the Appalachian Region:

1. Invest in education, technology, infrastructure, and broadband.
2. Engage the community over the long term.
3. Create communities where people want to live.
4. Grow youth engagement and next-generation leadership.
5. Identify and grow the assets in the community and region.
6. Build networks and foster collaboration.
7. Move multiple sectors forward for economic development and grow value chains.
8. Cultivate entrepreneurs and develop resources for business start-ups.

Through our analysis, we also identified 10 case study areas from which we gained further insight into how communities are evolving their approach to economic development and resilience, both inside and outside the Appalachian Region.

While this technical report documents details of our analysis, the other report, a guidebook, provides best practices, strategies, and case studies for economic development practitioners, local government officials, nonprofit organizations, and others working in the Appalachian Region.

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APPENDIX A: FOCUS GROUP MATERIALS

Strengthening Economic Resilience in Appalachian Communities project – Focus Group meeting

April 11, 2017

Meeting Summary

Focus Group overview and highlights

A Focus Group meeting was held on April 11, 2017 at the LENOWISCO Planning District Commission office in Duffield, VA to review the draft findings of the Strengthening Economic Resilience in Appalachian Communities project. The agenda can be found [at this link](#), and a list of participants may be found at the end of the summary. A series of initial interviews were held in January - March of 2017 to develop the draft best practices and strategies, in tangent with the economic analysis for the project [*and another round of interviews have taken place since the Focus Group meeting on the draft findings as well*]. The initial Interview Summary document is available at this [link](#), and will be updated with another round of interviews that will be held after the Focus Group meeting. The interviews captured key questions on how communities can grow economic resilience in Appalachia and ideas for best practices, strategies and case studies. The initial findings for both the qualitative and quantitative analyses were shared during the Focus Group meeting to look at what is missing, to hear priorities as well as feedback from participants.

The project team shared their initial findings thus far, asking Focus Group members for feedback, in a presentation that is available [at this link](#). Key areas of feedback are bolded throughout the document, with the following emerging as key points of Focus Group feedback:

- Address equality and engaging underrepresented populations should be a core focus of the project.
- Identify more precisely the audience for the guidebook in order to direct focus and language.
- Focus more directly on issues including investing in education, technology, and public water/sewer infrastructure and their effects on economic resilience.

Project background

The Strengthening Economic Resilience in Appalachian Communities project, sponsored by the Appalachian Regional Commission, is being conducted by Downstream Strategies, Penn State, Dialogue + Design, and other partners, will explore and document strategies and policies local leaders can use to enhance the future economic prospects of coal-impacted communities throughout the Appalachian Region. There are four key components to this research project: 1) develop a comprehensive, quantitative framework to explore economic resilience; 2) identify a

series of best-practice strategies for strengthening local economic resilience; 3) conduct up to 10 in-depth case studies; and 4) produce a concise guidebook that interprets and integrates findings of the research, written specifically for local economic development practitioners.

Purpose and Introductions

After participant introductions, Christine Gyovai of Dialogue + Design Associates reviewed the Focus Group purpose. Fritz Boettner of Downstream Strategies then introduced the project. Fritz noted that the project team has been employing both qualitative and quantitative methods to create an economic analysis, conduct a literature review and interviews, and create synthesis of factors for strategies, best practices and case studies around economic resilience, with the guidebook and report complete by September 2017. Questions and responses about the project overview included:

- A participant asked about the **audiences for the guidebook**. Would it be for officials?
 - Fritz replied that the intended audience would be a cross-section from officials to economic development leaders to community organizers, but its intended audience is for economic development practitioners across Appalachia.
 - Christine offered that the team has been asking for feedback on formats for the website from interviewees with ideas on how to make the guidebook as accessible and relevant as possible to economic development practitioners in Appalachia.
- Another participant asked what format will the guidebook take?
 - Print and digital version, as well as linking to videos, tools, and resources, and a strong focus on storytelling have all been considered (as well as other tools).
- A participant asked if there would be enough time to review the potential case studies during the Focus Group meeting, and asked about equity issues, noting that at the Appalachian Funders Network, they are trying to be sensitive to equity, race, and genders issues. She has been wondering if the team is looking at resilience as part of economic balance in measures.
 - The team noted that the best practice 8 includes engaging the underengaged community members currently, but this is the type of feedback they are looking for around what needs to be reflected in this project.

Draft Best Practices and Strategies

Christine then introduces the draft best practices and strategies, beginning with a quick look at the

Draft Best Practices

Draft Best Practices for growing economic resilience in Appalachia

1. Cultivate entrepreneurs and develop resources for business start-ups**
2. Identify and grow the assets in the community and region*
3. Connect to markets regionally and develop value chains*
4. Move multiple sectors forward for economic development**
5. Grow youth engagement and next generation leadership*
6. Build networks and foster collaboration***
7. Create communities where people want to live**
8. Engage the community over the long-term***

*** = important but not able to measure statistically,
 ** = directly,
 * = indirectly confirmed by the statistical

word cloud produced from the interview summary where words like: “people,” “communities,” “grow,” “work,” “possible,” and “stories” emerge as prominent elements of discussion. The draft eight best practices, at right, emerged from a combination of the literature review, the Advisory Team call, and interviews, and there may need to prioritize or develop guiding principles and further refine develop the best practices and strategies.

Stephan Goetz of Penn State explained the asterisks next to the best practices represent the overlap between qualitative research and their economic analysis, looking at what is measurable yet important. Before diving into strategies, Christine asked if Focus Group participants had any initial feedback from list of draft best practices (BP). Feedback included (with the list of Best Practices are listed first):

Best Practices for growing economic resilience in Appalachia

1. Cultivate entrepreneurs and develop resources for business start-ups
 2. Identify and grow the assets in the community and region
 3. Connect to markets regionally and develop value chains
 4. Move multiple sectors forward for economic development
 5. Grow youth engagement and next generation leadership
 6. Build networks and foster collaboration
 7. Create communities where people want to live
 8. Engage the community over the long-term
- Surprise that no BPs address **technology**. BPs 1 and 7 could include technology, but investing in information/technology infrastructure such as broadband, is not explicit. Christine replied that it didn’t emerge recently, but that the feedback was good. Three participants agreed that they were also surprised by the absence of technology in the BPs.
 - Pre-K through higher **education** are the **key to everything**: health, economic development, opioid addiction. It needs to be front page, BP 1. BP 5 hints at addressing these issues.
 - Are the BPs for communities or for whom? This could tilt the balance of what’s on the list, which should be based on the audience. We should **figure out the audience**, and then prioritize accordingly.
 - Entrepreneurship is a big term seen in different ways. There is national decline in the retail sector, and we might want to make a distinction between business start-ups and traditional retail. Traditional retail is consolidated, and we might need a deeper explanation of this. For example, it would be kind of crazy to encourage retail start-ups without looking at the market risk.
 - One participant noted that when they work with traditional economic developers and officials, their definition of economic development does not include entrepreneurial development. Part of the job is making that a priority and **communicating the value of entrepreneurship**.

Christine then offered that the BPs and strategies don’t necessarily reflect the implicit challenges, but recognize that challenges are present. Christine then reviewed the draft best practice and affiliated list of draft strategies. Feedback included:

- A participant noted that examples may need to be given for BP 3 around value chain to clarify its meaning as it currently seems more abstract than the others.
- Another strategy should be added under BP 4 around energy efficiency and renewables.
- Under BP 7, consider looking at Jonesborough, TN which is well-known for storytelling. Its proximity to Johnson City and its education challenges could make it useful to examine (noting that it is like Asheville but hidden).
- Megatrends include that technology is eliminating a lot of jobs in urban areas, but this technology also poses opportunities to attract people that are losing these jobs to the region.
- Under BP 8, one participant noted that we should look at where change comes from and use community listening as a key strategy and best practice.

Economic Analysis Discussion

Stephan then led the presentation of economic analysis findings. They had examined data from 300 counties looking at what factors they could measure such as, ability to rebound in terms of employment, which is more important to policymakers than income. The economics team hadn't looked at specific population's ability to rebound (alluding to equality sensitivity), but they do control for these variables.

Economic Analysis Findings

- The literature has indicated three categories: demographic/mobility, economic/industry, and community/health.
- They found that communities with a lot of people ages 25-44 are more resilient.
- College education seems to always be significant, that education IS key to everything.
- Other indicators of resilience are workforce participation.
- Poverty certainly makes it difficult to be resilient.
- Proximity to firms does not increase resilience.
- Ability to innovate has a strong positive effect on resilience.
- Diversity of industry is important.
- Some variables seem to cancel each other out such as effects of community colleges and broadband access lose significance when dominated by college effects.
- Child and elder care does not appear significant, but recreational opportunity is a positive.
- Social capital seems to be a surprising negative, which Stephan attributed to the higher rate of retirees that might add social capital, but might not be active in the economic arena.
- Self-employment may be a proxy for entrepreneur; it turns out that self-employment only increases resilience at low levels, but diminishes the county's resilience at higher levels. Stephan pointed back to the earlier point made about retail: we need to be careful about what they're doing and competing with.

Stephan described how they control for variables, for example looking into the effect of age or college education into the economic analysis. They are looking at correlation not causation. For example, migration could be important before resilience is measured; looking at the structure

of the economy before measuring resilience to claim causation. However, some are harder to separate, and are more associations than causations.

One participant suggested that it is important to **look at how the 2008 economic recovery was supported**. It may have more to do with whether the community was well-positioned to receive recovery assistance. Bigger industries were the bigger winners. Stephan offered that not all counties experienced the downturn, but that this is a good point.

In conclusion, Stephan shared a slide with the core findings. More resilient counties are:

- bigger, with more young workers and greater ethnic diversity, more in-migration and less out- migration, and more college-educated;
- more remote from metros, have less poverty, more labor force participation, innovation potential, more industry- but less knowledge diversity, less coal dependence; and
- less dependent on employment in community colleges, fewer health practitioners, more active in terms of direct farm sales.

He then shared some of the subtler findings:

- Self-employment matters but at a diminishing rate;
- Self-employment effect stronger in places with more population, or that are more remote;
- Social capital has stronger positive effects if the 25-40 year old cohort is smaller;
- Federal funding is more effective when there are fewer in-commuters; and
- Recreational opportunities matter when the density of existing business is lower.

Alan Collins then discussed the econometric analysis that his team has been working on as part of the economic analysis. Their team has looking at regional impacts and resilience where they found that some variables have a larger impact than others, and these will be part of the economic analysis.

Case Studies and Focus Group feedback

The project team then introduced online mapping tool that included the quantitative variables and helped Focus Group participants identify possible case studies. The team then discussed the process of how case studies are being selected. 113 locations have been explored as possible case study locations that have emerged from both the qualitative and quantitative analyses. The team noted that ARC has asked that they look outside of Appalachia as well as in the region, and at various scales, noting that data is most easily accessible at the county-level.

After reviewing map with possible case study locations, the project team asked Focus Group participants to consider two primary questions:

- What are we missing?
- What arises as a priority?

Closing questions and comments

- One participant noted that said she was interested in the comment about the regression analysis related to self-employment, and wanted to look at how we could relate that back to value-chain strategies. In Ohio they worked with auto suppliers, and notice that as they take on more employees, they become more tied into the value chain, which can affect them negatively. She was surprised by the potential effect of retirees affecting social capital. Maybe we could look at more positive stories such as youth in West Virginia. She gave the example of a youth-oriented Rotary Club that's young and active, and an important anchor in Athens, OH. She also suggested that we look more specifically at innovation since economic resilience is such a broad term to expand and clarify it, further noting that recreation opportunities may improve the quality of life, attract younger people, but also can come with low wages. She wants to understand these wages more, and advocated that wages are an indicator of economic resilience. In Athens, OH, companies have focused on technology (from GED to PhD levels).
- Another participant noted that capital/angel investment is important for small businesses, but is not flowing to rural regions. How is this accounted for in the analysis (if it is accounted for)?
- Another Focus Group member noted that more time for the Focus Group meeting would be helpful as 1 ½ hours wasn't enough time to get into depth or discuss many of the points in depth. The project team welcomed comments by phone or email after the Focus Group meeting as well. There were also concerns about the interviewees who were all white, and additional suggestions for interviewees were made.
- A Focus Group participant noted that all these solutions are exciting, and could help some members of the community but could create other problems. **How do we create solutions without creating more problems?**
- Another participant would like to see more women in the workforce. There are huge efforts at putting coalminers back into the workforce that have largely floundered. We should be looking at more opportunities for younger people and women.
- A Focus Group member added that we need to be making a connection between Best Practices 1, 3, and 4 connecting markets with opportunities for entrepreneurs.

After the closing feedback from Focus Group participants, the in-person participants continued to meet for a brief discussion around the suggestions for next steps. Feedback included:

- One participant noted that we might want to see what is already being done. Two participants have worked on a grant for the National Public Health Institute where they recently concluded seven Focus Groups in Virginia and Tennessee which were data-rich and focused on multi-sectors, gathering a lot of background on economic development policy. They were funded again and are setting up a population health network focusing on diabetes, bringing economic developers to the table and using community health rankings as a competitive incentive.
- Another attendee added that they could help make connections with targeting underrepresented folks to broaden perspective if helpful.
- Another participant noted that having more diverse interviewees would be important to ensure that a broad range of knowledge is represented. Christine responded, “Will the digital engagement help? (some nods), pointing to the need to expand the engagement period of the project.
- A participant suggested Erik Pages as an interviewee, who Christine noted has been interviewed.
- One participant commented that the research team had sent out the Best Practices before the Focus Group; we didn’t need to necessarily go over them. The economic material was useful to discuss. She added that **public water and sewer are significant factors in the ability to attract business**, and she would have loved to dig into people’s questions more. She wanted to see more about the map and case studies. She said that she is glad we’re pulling ideas outside the region, but is hoping case studies have factors that are relatable. Chattanooga has different considerations from Charleston, WV, for example.
- Another attendee agreed with the infrastructure piece and the community health column, but suggested that we also look at **multimodal transportation infrastructure**. Also Best Practice #7 highlights a possible case study in Cleveland, VA vs OH and TN? We might want to measure out-migrations and be ready to integrate with 2020 Census.
- A participant commented that people don’t want to talk about funding for public education (in many places, it has dropped off the map), but we have no alternative. If we decide to do more meetings, she would be happy to host a meeting in a central location. Christine asks if it would be best for in-person format, with the response being that people will pour their heart out if they know it’s being used for good.
- Another attendee agreed that people will travel and suggested including a lunch.

After the discussion concluded, the Focus Group meeting ended and the group was invited to send additional feedback by email or phone, with additional opportunities for engagement forthcoming.

Focus Group Participants

Jimmie Adkins, LENOWISCO PDC
Philippa Belsches, Just Transition Fund
Shannon Blevins, UVa-Wise Office of Economic Development
Dee Davis, Center for Rural Strategies
Eric Dixon, Appalachian Citizens Law Center
Peter Hille, MACED
Ginny Kidwell, Tennessee Institute of Public Health
Jennifer Simon, Ohio University
Ada Smith, Appalshop
Kent Spellman, Rails to Trails Conservancy

Project Team Participants

Christine Gyovai, facilitator, Dialogue + Design Associates
Emily Carlson, Dialogue + Design Associates
Evan Fedorko, Downstream Strategies
Fritz Boettner, Downstream Strategies
Stephan Goetz, PSU Regional Center for Rural Development
Allan Collins, WVU Economics

Strengthening Economic Resilience in Appalachia

Focus Group meeting
April 11, 2017
Duffield, VA and video-
conference

April 11, 2017

Strengthening Economic
Resilience in Appalachia

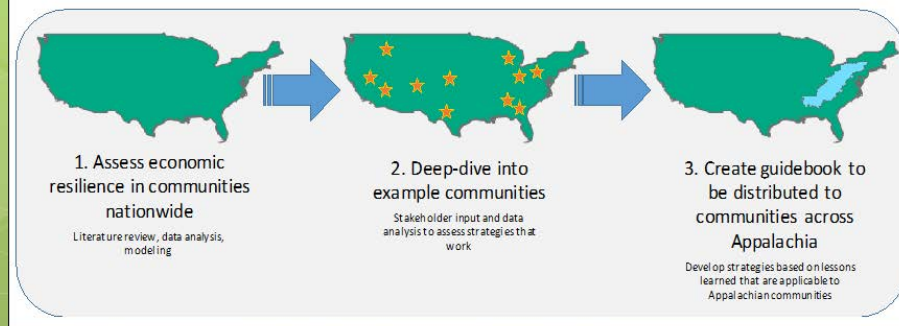
Focus Group overview

- Welcome, Agenda review, Introductions
- Project overview and background
- Best practices and Strategies (interviews)
- Economic Analysis overview and findings
- Case study selection is underway + digital engagement
- Questions, feedback and next steps



Project Overview

1. Measure the capacity of a local economy—town, county, or region—to recover or bounce back from a “economic shock.”
2. Quantitative and qualitative synthesis of factors
3. Case studies and best practices; development of a Guidebook for Appalachian Communities



Draft Best Practices for growing economic resilience in Appalachia

1. Cultivate entrepreneurs and develop resources for business start-ups**
2. Identify and grow the assets in the community and region*
3. Connect to markets regionally and develop value chains*
4. Move multiple sectors forward for economic development**
5. Grow youth engagement and next generation leadership*
6. Build networks and foster collaboration***
7. Create communities where people want to live**
8. Engage the community over the long-term***

*** = important but not able to measure statistically,
 ** = directly,
 * = indirectly confirmed by the statistical model.

1. Cultivate entrepreneurs and develop resources for business start-ups

- A. Connect with schools, colleges and universities for training, mentoring, and research opportunities.
- B. Develop entrepreneur resources, business plan competitions, and opportunities to grow local businesses and access capital.
- C. Advance opportunities for workforce training in specific sectors and industries including for regional context and displaced workers.
- D. Use social enterprise resources and tools to develop community-based businesses.
- E. Develop opportunities for remote work and telecommuting.
- F. Create entrepreneurial ecosystems with locally-centered markets.

❖ Place-based possible story: Southwest Virginia



2. Identify and grow the assets in the community and region

- A. Identify and promote assets within the region and community through partnerships.
- B. Link multiple destinations and activities to create more local business opportunities and encourage longer visits.
- C. **Tell the stories of the community, especially positive stories, to change the narrative.**
- D. Share resources across the region such as marketing resources or research into regional trends.
- E. Foster interconnection between rural and urban areas, in broader regions around resources, as well as food, recreation, and energy supply connections.

❖ *Place-based possible story: SE Ohio
– Athens – around local food*



3. Connect to markets regionally and develop value chains

- A. Connect multiple opportunities to grow a value chain around what is being created locally.
- B. Grow and connect with the broader region's economy and to market opportunities in regional urban centers.
- C. Use a systems approach to develop value chains; look across a region to determine what levers can grow economic resilience.
- D. Develop a broader recognition of the interdependence between urban and rural areas. Create a deeper recognition of the value of rural

❖ *Place-based possible story:
Morganton, NC – Opportunity Threads*



4. Move multiple sectors forward for economic development

- A. Develop a coordinated strategy for economic growth.
- B. Connect to regional markets for sales of products and services.
- C. Build grassroots support for economic diversification, and collaborate with public and private sectors.
- D. Learn how other communities and regions built economic growth and share ideas.
- E. Promising sectors include:
 - o Advanced manufacturing, health care, renewable energy, outdoor recreation, local food systems and agriculture, technology and others
 - o *Place-based possible story: PA Wilds and Bend, Oregon*

PA Wilds



5. Grow youth engagement and next generation leadership

- A. Develop programs by youth, for youth.
- B. Engage youth in arts, culture and community-building opportunities.
- C. Identify, mentor, and grow young leaders for the next generation.
 - o Develop mentoring, learning opportunities, idea exchanges and programs to grow skills and to learn about entrepreneurship (like App. Fellowship Program)
 - o Connect to schools and work with teachers, students, parents in multiple ways.
- D. Welcome young people in communities – ensure that youth feel welcome.
- E. Keep smart, young people in communities, and bring smart, young people from outside of communities in.
- F. Welcome new ideas, bold visions, and unlikely partnerships.

- o *Place-based possible story:*
Whitesburg, KY:
Mountain Tech Media
- o *Place-based possible story:*
Live Incubator in Beckley, WV



6. Build networks and foster collaboration

- A. Identify and grow a dedicated entity or anchor organization(s) to:
 - o Build capacity, move ideas forward, provide a consistent forum for collaboration, develop multiple funding streams, and help implement ideas.
- B. Work across silos and sectors; encourage entrepreneurial spirit and mindsets.
- C. Develop networks of communities working together and sub-regional networks.
- D. Develop long-term staffing capacity to move ideas forward.
- E. Cultivate grassroots efforts and community leadership, and effective communication using different tools.
- F. Use a systems approach to develop a shared understanding community opportunities and needs, to grow sectors, develop assets, and foster regional collaboration with long-term vision and effort.
 - o Engage economists at the regional scale to share knowledge and best practices.

- o *Place-based possible story: Eastern VT – response to Hurricane Irene*



7. Create communities where people want to live

- A. Cultivate a strong sense of place and pride in place through storytelling, arts, and cultural heritage opportunities.
- B. Value arts, culture, and heritage and use them as building blocks for a new economy in Appalachia. **Tell stories, share stories, including new, positive stories.**
- C. Grow community health and wellness.
 - o Create programs and opportunities specifically for childcare, elder care, women, single-parent households, and vulnerable community members to ensure that basic needs are met.
 - o Create high quality communities with amenities for all community members.
- D. Promote local investing via community foundations and seed funding for local ideas.
- E. Welcome new and diverse people
- F. Grow anchor institutions and business: university, hospital, elder/youth co-care

- o *Place-based possible story: Cleveland*
- o *Place-based possible story: Damariscotta, ME*



8. Engage the community over the long-term

- A. Develop a consistent forum for community engagement around a specific focus with a long-term facilitator or convener.
- B. Share ideas, challenges and successes with consistent communication with the broader community.
- C. Cultivate leadership and trust for long-term efforts and success.
 - o Lead from the middle. Create the space where leadership can come forward and flourish to create change together.
- D. Create ongoing engaging, safe spaces for the community to gather across sectors and for all community members to feel valued, welcomed, & heard.
 - o Engage under-engaged community members (those affected by decisions need to be part of the solution).
- E. Connect with community sparkplugs and bridgemakers in the community to sustain leadership, growth and momentum.

- o Place-based possible story: Buckhannon, WV
- o Place-based possible story: Chattanooga, TN



Economic Analysis Overview

- o Statistical model of county-level determinants of resilience (3,000+ obs.)
- o Interested in points that lie off the regression line
- o Also a spatial analysis, of spillovers
- o Literature identifies 3 categories of variables
 - o Demographic/mobility
 - o Economic/industry
 - o Community/health

Economic Analysis Findings: individual results

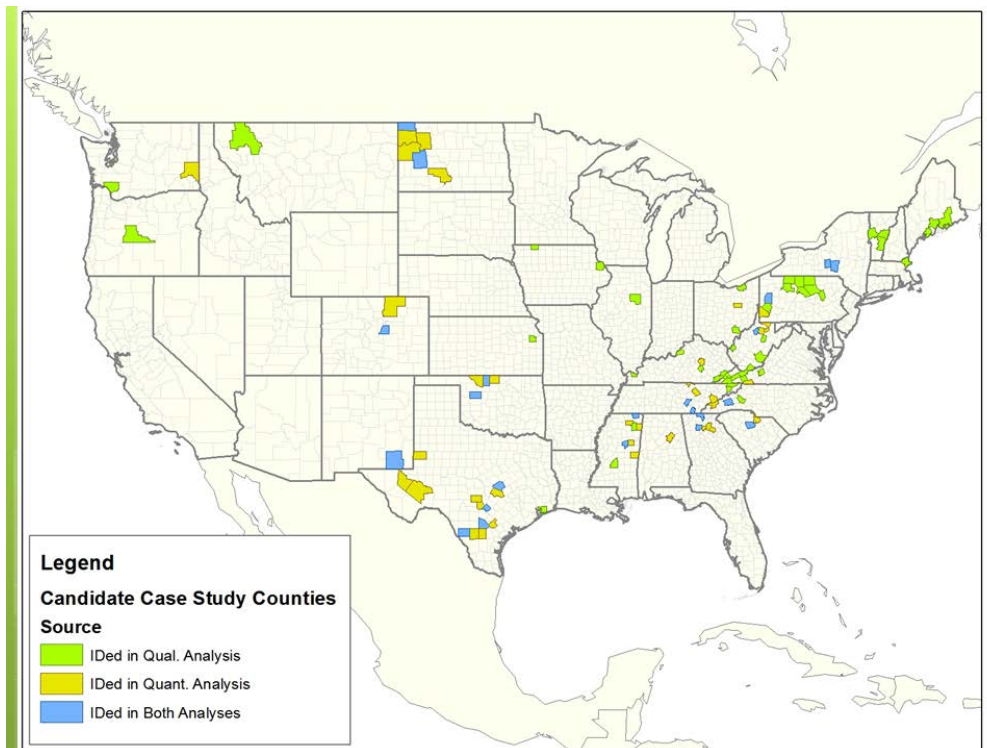
Demographic/mobility	Economic/industry	Community/health
age_25-44 (+)	distance_0.25M	edu_prime_secondary (+)
age_65+	business density (-)	edu_community college (+)
ethnic diversity	self-employment	broadband (+)
mobility_in-mig (+)	poverty (-)	child/elder care
mobility_out-mig (-)	participation (+)	healthcare practitioners
mobility_in-com	innovation potential (+)	recreational opportunity (+)
mobility_out-com (+)	diversity_industry (+)	natural amenity
residence_born	diversity_knowledge (-)	social capital (-)
population (+)	industry_Farming (-)	federal fund
land area	industry_Oil&Gas	%voting_competitiveness
edu_college+ (+)	industry_Coal (-)	agritourism (+)
	industry_Mfg (-)	direct farm sale (+)

More resilient counties are/have...

- bigger, with more younger workers and greater ethnic diversity, more in-migration and less out-migration, and more college-educated
- more remote from metros, have less poverty, more labor force participation, innovation potential, more industry- but less knowledge diversity, less coal dependence
- less dependent on employment in community colleges, fewer health practitioners, more active in terms of direct farm sales

More subtle results...

- self-employment matters but at a diminishing rate
- self-employment effect stronger in places with more population, or that are more remote
- social capital has stronger positive effects if the 25-40 year old cohort is smaller
- federal funding is more effective when there are fewer in-commuters
- recreational opportunities matter when the density of existing business is lower



Next steps for the project

- Case study selection is underway
- Digital engagement to refine best practices, strategies, and additional findings
- Practitioner guidebook and Final Report will be developed by the end of summer 2017

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APPENDIX B: INTERVIEW SUMMARY

Interview Summary **Strengthening Economic Resilience in Appalachian Communities**

June 20, 2017 (revised from April 7th version)

Overview

Initial interviews for the *Strengthening Economic Resilience in Appalachian Communities* project, sponsored by the Appalachian Regional Commission, were held between January – March 2017 and conducted by Christine Gyovai of Dialogue + Design Associates. A Focus Group meeting was held in April of 2017 to solicit feedback on the draft best practices and strategies, and then a second round of interviews were held in April and May of 2017 to gather additional feedback and to continue to refine the initial best practices and strategies based on Focus Group feedback. Finally, a survey was shared in late May – early June of 2017 with practitioners across Appalachia to prioritize the draft best practices and strategies and solicit new ideas, with 151 responses across Appalachia.

The ideas from the interviews are included below under the themes: Best Practices and Related Strategies, Tools, Resources, Points of Inspiration, Challenges, Guidebook Format Ideas, ideas of others to reach out to, and potential case study locations. Interviewees and interview questions are listed at the end of the document. The Interview Summary document served as a foundation for refining the Best Practices and Strategies with Project Team, Advisory Team, and Focus Group participant feedback over the course of the Economic Resilience project.

Best Practices for growing economic resilience in Appalachia

1. Invest in education, technology, infrastructure and broadband
2. Engage the community over the long-term
3. Create communities where people want to live
4. Grow youth engagement and next generation leadership
5. Identify and grow the assets in the community and region
6. Build networks and foster collaboration
7. Move multiple sectors forward for economic development and grow value chains
8. Cultivate entrepreneurs and develop resources for business start-ups

Best practices and strategies for growing economic resilience in Appalachia

- Prioritized strategies are listed under each best practice

1. Invest in education, technology, infrastructure and broadband

- A. Develop broadband accessibility throughout Appalachia.
 - Develop training opportunities for communities and organizations on communications, community outreach, and how to effectively use the internet and social media.
 - Foster broadband development as a key component for building remote work (telecommuting) possibilities, existing business expansion, and new business location.
- B. Invest in infrastructure including public water, public sewer, energy accessibility, and transportation -- including multi-modal transportation.
 - Create renewable energy projects throughout Appalachia as many businesses have a renewable energy requirement to locate in an area.
 - Develop public and private partnerships to create needed infrastructure.
 - Consider proximity to highways, markets, transportation options, and airports which are all strong factors in determining the competitive advantage of an area for new build location or existing business expansion.
 - Expand public sewer throughout Appalachia using innovative technologies where needed.
- C. Foster educational opportunities from preschool through post-secondary for a wide range of community members.
 - Grow educational attainment to grow community quality of life, entrepreneurship opportunities and attract high-level employment possibilities.
 - Develop free public vocational and higher education classes to prepare and train workers for employment and for entrepreneurship possibilities.
 - Develop both general and specialized educational offerings as a way to grow community and economic resilience, to grow needed skillsets for specific sectors, and for developing new business opportunities and entrepreneurs.
- D. Develop “learn and earn” models of workforce training where workforce training and academic classes are both offered around a specific topic such as local food or renewable energy.
- E. Grow opportunities around technology in multiple sectors.

2. Engage the community over the long-term

- A. Engage under-engaged community members -- those affected by decisions need to be part of the solution.
- B. Create ongoing engaging, safe spaces for the community to gather across sectors and for all community members to feel valued, welcomed, and heard.
 - Welcome newcomers to communities, or returning community members, by opening up leadership circles and creating communities that will attract them.
- C. Share ideas, challenges and successes with consistent communication with the broader community.
 - Tell stories about other communities that have built their resilience.
- Develop opportunities for people *within* communities to identify both the problem and solution to community challenges and opportunities. Ideas that emerge from within the community should be prioritized for growing economic resilience.
- D. Cultivate leadership and trust for long-term efforts and success. Create the space where leadership can come forward and flourish to create change together as a community.
 - Connect with community “sparkplugs and bridgemakers” in the community to sustain leadership, growth, and momentum.
 - Foster creative long-range planning, strategic planning and opportunities to engage with elected officials and in policy creation.
- E. Develop a consistent forum for community engagement around a specific focus with a long-term facilitator or convener.
 - Use innovative ways to engage the community, including through media, outreach, knocking on doors, sharing ideas, recognizing participants for their contributions, and make meetings fun.

ADDITIONAL IDEAS/QUOTES:

- a. Share ideas, challenges and success with consistent communication with the broader community, and provide regular forums for engagement.
 - “Celebrate what is positive! There are so many reasons for celebration.”
 - “We need to consider individual and collective identity. If folks understand where they come from and what their community is and what their role is with the community, the assets, and their uniqueness – this is very important in creating sustainable economic growth.”
 - “We need to tell a compelling narrative succinctly, repeatedly, through direct stories and facts, and tell it again and again to change that narrative and implement better policies.”
- b. Develop an ongoing place for having community conversations around a focus.

- “As a community – we must create the habit of dialogue and deliberation and then structures for action.”
- “Stuff only works when citizens come together to make change – include everyone.”
- c. Listen and learn from community members where there are opportunities and challenges, and grow ideas that can be developed by the community.
 - Develop a strong sense of *who* a community is to create an economic plan that will work over the long-term.
 - “Ideas need to come out of the people themselves or they won’t be sustained.”
 - “We need to listen and to hear what is possible from folks in communities about what they see and experience.”
 - Community energy and excitement needs to be present to start to make change, and to stay positive and optimistic for the long road of community transformation.
 - Practitioners need to “get on the balcony” to see the big picture view to make connections with other people and partners, as well as across ideas and projects to advance the work.

3. Create communities where people want to live

- A. Grow community health and wellness. Focus on creating a high quality of life with strong community health and wellness which are strong drivers for new business location and for new residents to move to communities.
 - Create amenities, programs, and opportunities for all community members, including childcare, elder care, women, single-parent households, and vulnerable community members to ensure that basic needs are met.
 - Determine barriers and opportunities for community members to access social services, including ways to address addiction.
 - Address systemic forms of poverty by reaching out to people where they are and use a grassroots approach to grow economic resilience in communities.
- B. Cultivate a strong sense of place and pride in place through storytelling, arts, and cultural heritage opportunities, and value them as building blocks for a new economy in Appalachia.
 - **Tell stories, share stories, including new, positive stories.**
 - Share information for peer learning among community members and leaders, including through in-person gatherings, using audio and video to share stories, and to identify points of contact to learn more about specific stories, people and places.

- C. Welcome new and diverse people into communities. Encourage new residents, including telecommuters, young families, and immigrants.
 - Use an intentional approach to address population decline in communities.
- D. Grow anchor institutions, businesses, and opportunities that grow thriving communities.
 - Develop and grow colleges, universities, hospitals, as well as elder and youth co-care opportunities.
 - Develop “third spaces” – neutral spaces where community members can come together outside of home and work (such as coffee shops, co-working spaces, and churches.)
 - Examine land ownership, including absentee landowners, and how it impacts communities and the broader region.
 - Promote local investing via community foundations and seed funding for local ideas.

ADDITIONAL IDEAS/QUOTES:

- a. Create high quality communities with amenities for all community members.
 - This should include “creating communities with broadband and coffee shops” and “basic infrastructure, like sewer lines, broadband, decent housing, and a community center.”
 - “We need honest communication systems that work and connect people to the world.”
 - “We need to focus on the creative economy – we need to create places where people want to raise their kids and retire. Rural communities like Appalachian can get a fresh look, and what is important is that we have attractive communities with high amenities that people make choices to come live here -- folks who are job creators. That gives us a chip in the game.”
- b. Value arts, culture, and heritage and use them as building blocks for a new economy in Appalachia.
 - “Culture, environment, our history – all of a sudden, those things we thought were holding back the economy turned out to be what is left to build a future from.”

4. Grow youth engagement and next generation leadership

- A. Identify, mentor, and grow young leaders for the next generation.
 - Develop mentoring, learning opportunities, idea exchanges and programs to grow skills and to learn about entrepreneurship (like Appalachian Fellowship Program, with elected leaders, and across generations).

- Encourage youth and provide opportunities for them to be in positions of responsibility.
 - Connect to schools and work with teachers, students, and parents in multiple ways.
- B. Keep smart, young people in communities, and bring smart, young people from outside of communities in.
- C. Engage youth in arts, culture and community-building opportunities.
- D. Welcome new ideas, bold visions, and unlikely partnerships.
- E. Develop programs by youth, for youth.
- F. Build the capacity of local leaders to build the economy, and grow and engage local, diverse leadership across a community.
 - Grow peer-to-peer learning networks, coaching opportunities and leadership development opportunities to build capacity of local leaders.
 - Foster opportunities for young leaders to engage with elected officials in policy creation, to become elected officials, as well as to engage with community-based initiatives.
- G. Welcome young people in communities – ensure that youth feel welcome.

ADDITIONAL IDEAS/QUOTES:

- a. Develop programs by youth, for youth.
- b. Advance programs such as the Appalachian Fellowship program for young leaders to grow skills, see what is happening regionally, and to learn about best practices and innovation throughout the region.
- c. Engage youth in arts, culture and community building opportunities.
 - *Create community, economic, and cultural events, projects, and venues that welcome and facilitate participation from all ages*
- d. Identify, mentor, and grow young leaders for the next generation.
 - “When look around the state [of WV] at the leadership in different NGOs, there are incredible young people doing amazing work around community development. We need to support them. We need to be passing the baton to remarkable young leaders and be around to mentor them.” (<http://generationwv.org/>)”
- e. Welcome young people in communities – ensure that youth feel welcome.
- f. Keep smart, young people in communities, and bring smart, young people from outside of communities into them.
- g. Welcome new ideas, bold visions, and unlikely partnerships.
 - Cultivate out-of-the-box thinking and program opportunities such as a “Why Not Appalachia” social media campaign to generate new, bold, and crazy ideas.
 - Welcome new thinking and ideas from new people; be willing to experiment.
- h. Develop mentoring and learning opportunity to cross-pollinate ideas and grow skills.
- i. Create role models and mentoring opportunities for youth to learn about entrepreneurship.
- j. Connect to schools and work with teachers, students, parents in a variety of programs and partnerships.

5. Identify and grow the assets in the community and region

- A. **Tell the stories of the community, especially positive stories, to change the narrative.**
 - Create intergenerational learning exchanges between elders and youth, including gathering oral histories, as well as learning opportunities between towns and between practitioners.
- B. Foster interconnection between rural and urban areas, in broader regions around resources, as well as food, recreation, and energy supply connections.
- C. Identify and promote assets within the region and community through partnerships.

- Focus on integrating arts and creative placemaking, into community and economic development efforts across the community.
- D. Share resources across the region such as marketing resources or research into regional trends.
- E. Link multiple destinations and activities to create more local business opportunities and encourage longer visits.
 - Promote living wage jobs, especially those that are related to the tourism industry.
 - Retain the vibrancy and uniqueness of communities – don’t allow the effects of tourism to significantly alter local community character or landscapes.
- F. Build community-based philanthropy by tapping community wealth such as a community foundation so that communities can capture and invest in economic development locally.

ADDITIONAL IDEAS/QUOTES:

- a. “Positive things happen when communities get the message that no one is going to come in and create a stronger economy for them -- change is going to happen from within the community. When communities say, “We need to figure that out. We need to invest in ourselves and leadership, then we are going to figure out what drives this economy”, and then when people will go out and see who the entrepreneurs are in their communities and they have honest conversations about what would it take to grow businesses, recognizing that this is their job and responsibility -- that creates the BIGGEST CHANGE.”
- b. Identify and promote assets within the region and community through collaborative partnerships.
 - As a community, identify and understand the assets that exist, what is missing, and then find ways to build on the assets that exist and build the ones that don’t yet exist.
 - Identify cultural associations across the region, as both the audience and the market.
- c. Identify and develop regional promotion around regional topics and assets.
 - “Appalachian heritage is important and should be leveraged. “
- d. **Tell the stories of the community, especially positive stories, to change the narrative.**
 - “Go to communities that are succeeding – we need a culture of being imaginative. We need sparkplugs that will keep trying new ideas.”
 - “Test the remedies that other people offer to see if makes sense to them. People know their own communities and what will work. We need to be using a host of strategies. We need to be willing to take everything we learn, test assumptions, take diverse approaches, and create a vision that others

can see. We need to paint a picture that glows in the dark so that people can see it. People will rally to an idea that is culturally appropriate; if it makes sense, if it inspires them, they will help. You have to have a community shaman.”

- e. Determine how rural and urban areas, and broader regions, are interconnected especially around resources and supply connections around food, recreation, and energy.

6. Build networks and foster collaboration

- A. Use a systems approach to develop a shared understanding, community opportunities, and needs to grow sectors, develop assets, and foster regional collaboration with long-term vision and effort.
 - Engage economists at the regional scale to share knowledge and best practices.
- B. Cultivate grassroots efforts and community leadership, and effective communication using different tools.
 - Determine the right level of partnership needed for effective engagement.
- C. Develop networks of communities, both local and regional, working towards a shared understanding of the opportunities, gaps, strengths, and unique elements of each community.
 - Foster opportunities for generational leadership (both in terms of staff and organizations) to grow the work in the future and adapt to changing needs and opportunities of an initiative.
 - Develop structured MOU's between partner organizations, which may result in opportunities for greater funding.
- D. Identify and grow a dedicated long-term entity or anchor organization(s) to:
 - Build capacity, move ideas forward, provide a consistent forum for collaboration, develop multiple funding streams, and help implement ideas.
 - Identify ways for funders and practitioners to work together as partners to shift the power structure.
- E. Work across silos and sectors; encourage entrepreneurial spirit and mindsets for project growth and development.
- F. Develop long-term staffing capacity to move ideas forward and foster economic transformation.
 - Create a training program and a cohort of practitioners on how to accelerate the building of an economic resilience model from the bottom-up.

ADDITIONAL IDEAS/QUOTES:

Ask: What is your network?

Ask: What are the anchor institutions in your community and region?

- a. Identify and grow a dedicated entity or anchor organization to: build capacity; move ideas forward; provide a consistent forum for collaboration; develop multiple funding streams; and help implement ideas. This might include an academic institution, a non-profit organization, a consensus-building group, or another entity.
 - “Anchor institutions allow voices to come together to speak for something greater than themselves.”
 - “There is more knowledge, less duplication, more efficiency when we work together with a more effective use of resources – we get deeper impact and at a broader
- b. Develop funding opportunities and revenue sources collaboratively based on regional opportunities and needs from a variety of sources.
- c. Develop networks of communities working together.
 - “The future will be in partnerships.”
- d. Foster effective communication using different tools.
 - Develop intergovernmental cooperative agreements for counties and agencies to collaborate together in ongoing forums to foster greater collaboration.
- e. Use a systems approach to grow sectors, develop assets, and foster regional collaboration noting, that long-term vision and effort are needed to grow resilience and sustainability.

7. Move multiple sectors forward for economic development and grow value chains

- A. Connect multiple opportunities to grow a value chain around what is being created locally.
 - Use a systems approach to develop value chains; look across a region to determine what levers can grow economic resilience.
 - Develop a broader recognition of the interdependence between urban and rural areas. Create a deeper recognition of the value of rural.
- B. Build grassroots support for economic diversification, and collaborate with public and private sectors.
 - Engage both non-profit organization involvement as well as market-connected enterprises.

- Develop models that engage more than one discipline that can yield multiple results
- C. Promising sectors include:
 - Advanced manufacturing, health care, renewable energy, outdoor recreation, local food systems and agriculture, technology and others
 - Find ways to focus on ideas that come from within the community around sector-based economic growth (not ideas that are externally imposed on communities).
 - Develop means to not create only service-sector work through tourism.
- D. Connect to regional markets for sales of products and services.
 - Grow and connect with the broader region's economy and to market opportunities in regional urban centers.
 - Examine what financial and tax incentives can be made available to encourage businesses to locate in a particular area, expand programs and resources (such as loans and grants) to expand existing businesses, and ways to connect with regional marketing opportunities to promote localities and regions.
- E. Develop a coordinated strategy for economic growth.
- F. Learn how other communities and regions built economic growth and share ideas.

ADDITIONAL IDEAS/QUOTES:

- a. Build grassroots support for economic diversification and collaborate with public and private sectors.
 - “Build a foundation on identifying assets, focusing on certain sectors, and then make investments in certain areas... Having government agencies at the table is important to codify collaborative processes. Getting political and policy support for investments has been crucial [in our success].”
- b. Learn how other communities and regions built economic growth and share ideas.
- c. Connect multiple opportunities to grow a value chain around what is being created locally.
- d. Grow and connect with the broader region's economy.
- e. Use a systems approach to develop value chains; look across a region to determine what the levers are to grow economic resilience.
 - a. “We need to use systems thinking to generate multiple forms of wealth and wealth creation.”
- f. Connect to market opportunities in regional urban centers.
- g. Develop a broader recognition of the interdependence between urban and rural areas. Create a deeper recognition of the value of rural.

- h. “Storytelling, which many Appalachian people do well, needs to be part of our products and services. Storytelling needs to infiltrate all small business messaging.”

8. Cultivate entrepreneurs and develop resources for business start-ups

- A. Create entrepreneurial ecosystems with locally-centered markets.
 - Conduct organizing within a community to think about economic development and what opportunities are there; talk to entrepreneurs around what opportunities are emerging.
- B. Develop entrepreneur resources, business plan competitions, and opportunities to grow local businesses and access capital.
 - Identify CDFIs (Community Development Financial Institutions) within Appalachia that could be strong resources for entrepreneurs or community groups.
 - Develop statewide programs to promote the growth of new industries within states.
 - Build the capacity of communities for entrepreneur-focused economic development through developing multi-year leadership teams, fostering leadership development, training, and coaching mentors, building on ideas and assets that are identified that arise from within the community.
 - Connect to the assets of a community around to how to transition businesses to a new generation.
- C. Connect with schools, colleges and universities for training, mentoring, and research opportunities.
- D. Advance opportunities for workforce training in specific sectors and industries including for regional context and displaced workers.
- E. Use social enterprise resources and tools to develop community-based businesses.
 - Cultivate successful business accelerators, co-working spaces, and maker spaces.
- F. Develop opportunities for remote work and telecommuting.

ADDITIONAL IDEAS/QUOTES:

Ask: Who are the entrepreneurs in your area?

Ask: What resources are available for entrepreneurs and business start-ups?

- a. Advance opportunities for workforce training in a variety of specific sectors and industries. Connect to regional opportunities and needs, and develop programs and possibilities specific to displaced workers’ skillsets and opportunities.

- Re-envision the structure of farmer's markets to allow for more diversity of goods to be sold. Create opportunities to enable low-income participation.
- b. Note that growing entrepreneurs and small businesses takes time in Appalachia – it is a different mindset than what many community members are used to.
 - “Tell stories and change the narrative.”
- c. Develop opportunities for small business owners to teach and mentor students in high schools and colleges to develop skills and leadership.
 - For example, in the PA Wilds effort, they are creating opportunities for outfitters to teach in high schools during the off-season.
- d. Develop multiple ways for small businesses to access capital.

GENERAL TOOLS AND RESOURCES:

- Orton Family Foundation – Heart and Soul communities
- Main Street Communities and Main Street resources
- Connect with non-profit organization leadership and initiatives
- Tupelo – 5 level Pyramid from Vaughn Grisham around community self-actualization
- Water barrel model from Brushy Fork around a community's economy
- Just Transition network and model
- MACED ETEK Model (graphic)
- Policies are important including the RECLAIM Act
- Funding is important – POWER funding has been key to foster local and regional collaboration
- Wealthworks.org (mentioned by several people; also under resources)
- VISTA program “can be transformative”
- VEDP guidebook:
<http://www.yesvirginia.org/Content/pdf/guides/Guidebook%20for%20Elected%20Officials%202017-2018.pdf>
- Appalachian Fellowship program

Resources

- CDBG (Community Development Block Grant) and EDA (Economic Development Administration) funding
- Center for Rural Entrepreneurship
- Appalachian Funders Network and investment potential in Appalachia
- *Energizing Entrepreneurs* is a great book
- Heartland Center in Nebraska
- BALLE
- Open Space Technology

- Democracy Collaboratives <http://democracycollaborative.org/>
- Ron Eller, John Stephenson, Vaughn Grisham have all done great work around building community resilience.
 - Ron Eller - <https://history.as.uky.edu/users/eller>
 - John Stephenson - https://en.wikipedia.org/wiki/John_B._Stephenson
 - Vaughn Grisham - <https://www.kettering.org/catalog/product/tupelo-evolution-community> and https://assets.aspeninstitute.org/content/uploads/files/content/docs/pubs/Tupelo_0.pdf
- Resilience Institutes from the Rockefeller Foundation
- Just Transition Fund
- Project for Public Spaces
- ASPEN Institute
- Association for Enterprise Opportunity
- Central Appalachian Network
- Alliance for Appalachia, including their new toolkit for economic transition opportunities around post-mined lands
- Community Economic Development Network of eastern TN
- Barbara Wycoff shared three possible case study profiles that we are welcome to use
- Wealthworks.org
 - <https://www.wealthworks.org/economic-development-resources/wealthworks-videos>
- POWER funding and the resulting partnerships that have been developed (even in unsuccessful grant applications)
- Kellogg's Rural People and Rural Policy work
- EPA Competitive Advantage brief (similar to this work): https://www.epa.gov/sites/production/files/2015-05/documents/competitive_advantage_051215_508_final.pdf
- Brushy Fork case studies
 - Video from the Brushy Fork community leadership curriculum that includes a few of the spark plugs: <https://www.youtube.com/watch?v=pJ1B7HvTT0E>
- AceNet resources:
 - <http://acenetworks.org/community/>
 - <http://acenetworks.org/acenet-consulting/case-studies/>
- *Dawn of Systems Leadership* – https://ssir.org/articles/entry/the_dawn_of_system_leadership
- <https://tgkvf.org/presidents-message-dr-michelle-foster-2016/>

- Temali, M. (2004). *The community economic development handbook: Strategies and tools to revitalize your neighborhood*. St. Paul, MN: Amherst H. Wilder Foundation
- TOOL: <http://whatsnextwv.org/>
- <http://www.yesmagazine.org/commonomics/these-young-people-are-pioneering-a-post-coal-economy-in-appalachia>
- WV Hub model for building capacity in communities
 - WV Community Building Toolkit from the WV Hub
 - Hub NewsFeed of successful stories from the region (possible case study resource)
 - Hubapalooza – face-to-face, place-based learning exchange
- The Center for Rural Entrepreneurship is a national NGO.
<https://www.energizingentrepreneurs.org/> There are many tools, videos and examples on their website.

Points of inspiration

- Benham school in and Lynch in Kentucky and its creation as a community space
- FARMACY - giving prescriptions for food in partnership with farmer's market.
<http://cfaky.org/what-we-do/appal-tree/farmacy-program/>
- Connect KY – successful example of regional broadband development
- NorrisBuilt Fabrication in Norton, Virginia
- Western Front and the Inn at Wise in SWVA
- Northrop Grumman and CGI businesses in SWVA
- Berea Tourism Business Accelerator
- Learning what the younger generation is interested in is a point of inspiration of what kinds of businesses to recruit and develop.
- Success stories of entrepreneurs in the area.
- Bren Smith
- Clearfork Community Institute
- The Next in SWVA
- Foundation for Appalachian Kentucky – Community Foundation
- Higher Ground Theatre in Eastern Kentucky
- West Virginia Hive Accelerator (<http://nrgrda.org/our-team/joseph-brouse/>)
- Opportunity SWVA and the Clinch River Valley Initiative
- Crooked Road
- Mountain Tech Media
- Lost Creek Farm in WV
- Next Generation and Art of the Rural
- Dilapidated housing project in WV (WV Hub is working on this)

- The town of Gilbert in Mingo County, WV has done an excellent job of building small business opportunities around trails tourism, and those opportunities were made possible by the local town government's embracing the positive changes brought about by the Trails
- Appalachian Conference on Social Enterprise with forthcoming facilitator's guide and video.
- Appalachian Harvest as a model of an NGO (Appalachian Sustainable Development project) that is taking advantage of market forces and the positive elements of being an NGO. They have been working for 15 years and they drew \$2.5M in the last year, most of which has gone back to farmers.
- Williamson WV Health and Wellness Center – successfully fostered small business development that has been an outgrowth around growing the local food involvement, recreational opportunities, garnering more community engagement.
- Refresh Appalachia – growing farmers to become producers that develop small business ventures.
- Coalfield Development Corporation workforce training model which includes in the example of local food involves crew members working 33 hours a week in an incubator farm center – growing vegetables and livestock on a post mined land with hydroponic growing. Crew members also have 6 hours of academic classes a week that leads to an Associates degree, and 3 hours of life skills training as well.
 - Coalfield employs a family of social enterprises with same model across several different sectors to recreate communities, in construction, solar development, agriculture, post-mined land use and other sectors.
- “KY Valley Educational Cooperative -Amazing things are happening in the schools with creativity and action. The Gates Foundation came in to the area to see how evaluation is happening. Kids are building wind tunnels, prosthetics, Kids are taking up the challenge of recreating place, and they are doing it.”
- Social Enterprise gathering in Morgantown in May

Challenges to grow economic resilience in Appalachia

- A lot of information, “know how” and knowledge that is associated the older generation is being lost as those generations are passing away.
- Access to capital for small businesses and risk aversion.
- A lack of infrastructure has been one of the biggest factors holding regions back in Appalachia from economic growth.
- There is a rich civil rights history but also a troubled history of white supremacy and segregation in many areas of Appalachia.
- Difficulty in doing pro-active planning: “Communities bumble along unless have a great opportunity or a great crisis. It is horrible to see what is happening with the coal sector, but it does sparks activity and that is a silver lining. It should have

happened 20 years ago. Due to generational change and economic pressure, many coal communities are re-thinking their foundations of local economies.”

- There is a need to look at what the barriers are to growing community health and wellness, including how to access social services and address addiction.
- Lack of innovating thinking, bold planning and fresh ideas and planning for economic development. “Many of the generation of economic developers are from the 60’s-70’s – lots of good old boys who are locked in old ways of doing things. They are becoming stayed. It can be hard for new ideas and for new ideas and people to break in. Old ways of thinking about economic development- you see it in action too.”
- Entrenched power structures, including federal agencies, and state politicians who aren’t morally just.
- Limited acceptance of newcomers – many people feel threatened by new ideas and by newcomers.
- Many people feel marginalized and discounted, like their ideas don’t matter. Many haven’t been engaged or including in opportunities for new or innovative thinking of planning, but would participate if they were asked or if there was a consistent forum for their ideas to be heard and valued.
 - “How do you have the naysayer see the long-term, and bring them to the table and see that they are important part to processes?”
- Extreme poverty and the inability to meet basic needs, including long-term generational poverty.
 - “People are leaving, there is no work and growing despair and addiction. It is not having a clear path forward that is a big part of the problem.”
 - “Folks who were former miners have beaten bodies – they have homes they can no longer pay for and a skill set that is not transferrable outside of manufacturing.”
 - “Coal severance taxes supported schools and infrastructure, and was a godsend for so long. Now that it has taken this turn, people are really struggling. The devastating human impact of this shift is indescribable on the livelihoods on homes and families.”
- People are leaving and the resource (coal) won’t return.
 - “People are staying – some – but with the hope that the new administration will restore coal mining opportunities – the market shift, the price of natural gas and the investment in natural gas producing facilities mean that (coal opportunities) will never be what it was. “
 - “Many people are leaving. There has been a mass exodus for quite some time, but many are coming back. There are a lack of opportunities, but a strong sense of belonging and sense of place here with family bonds that run so deep. There is strong grounding in a community. “
 - “The reality that coal is not coming back to the level it was, and the difficulty

and sadness in that reality, is very hard for people to look at or acknowledge.”

- “As a community (in eastern Kentucky) we are down to around 3,000 coal miners now. But there are 30,000 health care workers, but we don’t pay attention to them.”
- The boom and bust cycles of an extraction-based economy have created a non-durable monoconomy create multiple challenges.
- Many undocumented immigrants and Latino families especially are in vulnerable positions in communities and need opportunities to grow community and safety.
- “Economic resilience will come back to monoculture based on gas, not coal. Everything else will be driven out.”

Practitioner Guidebook Format ideas and sharing best practices

- Use “drumbeat storytelling” as a way to change things via making connections.
- Develop checklists and menus that communities can use with real practical examples.
- Develop a printed guidebook with digital resources.
 - Easy to access with scaffolding ideas.
 - Connect to videos, reports, links to resources.
- Use simple, common language.
- Share stories from one community to another – this is important – lifting up stories of real people in real places.
- Create different elements of the report/ product so that “folks can consume what is relevant to them.”
- Videos to highlight examples.
- Share principles and practical examples.
- Focus on sector-based work to divide content/ subjects up by a specific topic or idea for specific audiences.
 - Look for specific points of entry by topic (such as around dilapidated buildings or renewable energy).
 - Share information about different types of capital and social enterprises.
 - Include information about systems thinking (thinking long-term, interconnection of ideas and resources—“when you push something else is pulled”).
- Long-term ideas for growing economic resilience:
 - Create a long-term regional focus/advisory group comprised of individuals who’ve had success in their respective communities of building economic resilience through collaborative partnerships and creative thinking.
 - Create face-to-face inter-region exchanges for community members to learn

from one another.

- Develop a road show of what has worked, and smaller meetings, and take it to different communities.
- Guidebook audience considerations:
 - Ask: “What is it in the world do you want to change? Who needs the info to make change happen? How do those people get their information (so that you aren’t using channels that don’t work)? How do you motivate communities?” Create living documents with photos and video links.
 - Create different formats for different audiences
- “Have a mix of experience, analysis and implications. Create 2-4 good examples that are different enough to appeal to a broad base of practitioners, but that common learnings and broader lessons can be distilled from. Have practical experience, and also hard, solid facts and regular thinking. We need real examples – grounding in the real world and examples that are mixed enough – not singularly unique – not in a place or in a stage that is too far from the audience’s experience. Not Asheville or Portland – but lessons learned from places. Stating things as simply as possible.”
- **Peer learning opportunities are key.**
 - This needs to be in person to build trust and legitimacy.
 - Site visits and place-based learning are key.
 - Holding convenings around sectors.
 - Use social media more fluently.
 - Hold hybrid webinars and conference calls where people can be peer learners together.
- In the digital engagement, ask respondents about how they do implementation—with questions such as “What is your revenue generating process. How did you set it up? What do you do with the revenues?”
 - Gather ideas for practitioners to proactively plan how to fund initiatives by understanding other revenue generating programs.
- In the case studies, ask specific questions about how revenue streams are set up, how organizations functions, how it was established and how revenue is generated.

Who else to engage in the effort moving forward

- USDA Forest Service
- Main Street
- Business owners
- Williamson Health & Wellness Center - www.williamsonhealthwellness.com. Darrin McCormick is the outreach coordinator, and he can be reached at (304) 235-3400.
- Foundations such as Benedum, Babcock, and ARC
 - Ray Daffner of ARC

- Todd Christensen
- Stacy Mitchell of the Institute for Local Self Reliance
- Kimber Lanning – founder and executive director – Local First Arizona
- Kate Green – Mainstreet Fairmont
- June Holley – founder at ACEnet. <http://www.networkweaver.com/>
- Deb Markley
<http://www.energizingentrepreneurs.org/about/team.html/title/deborah-markley>
- Charleston WV Main Street – Rick Cavender
- Williamson, WV - Health and Wellness Center – Maria Arnott or Jenny Hudson form the Mingo Co. Diabetes coalition
- [Buckhannon, WV](#) - CJ Ryland
- Contact for small economic development projects beside tourism economies - Deborah Bahr, Cosby, Tennessee
- Using historic African American history infrastructure as economic development components: Carlene Robinson, Tanner Preservation Alliance & Tennessee Picnic, Newport, Tennessee
- Stella Gudger, Price Public Community Center & Swift Museum, Rogersville, Tennessee
- Beth Vanlandingham, Carson Newman University's African-American Heritage Alliance Mapping project, Jefferson City, Tennessee
- African American data: William Turner
- Marie Cirillo, Clearfork Valley of TN
- Marie Webster – the Director of the Clearfork Community Institute
<http://www.clearforkcommunityinstitute.com/>
- Tonia Brookman – Director of the Woodland Community Land Trust
- Michelle Mockbee who worked on the Clearfork Community Institute for many years and helped develop the Volunteers in Partnership (VIP) program there and ran a participatory action research practicum in the summers with VIPs.
- Lyndsay Taurus - The Economic Transition Coordinator for The Alliance for Appalachia
The Alliance for Appalachia is an alliance of 16 member groups across Appalachia working on issues around coal mining and economic diversification.
<https://theallianceforappalachia.org/>
- Emma Cosigua. She is from Guatemala and lives in Knoxville. She is very involved in community work with immigrants, education reform, over-policing, etc. and would be great to talk to. The 2015 Appalachian Media Institute cohort, Appalshop's youth media program, traveled to Knoxville to interview Emma and other community members about their experiences living as Latinx in Appalachia and produced this documentary: [Dos Patrias](#).

Potential case studies suggested from interviewees

- Look outside of Appalachia, particularly to communities that have bounced back

from natural disasters or that have lost entire industries (such as in VA where VEE was created).⁸

- “The best places are still developing their ability to be resilient. We need actual data though. Many communities are coming to grips with the need for greater reliance and tools for building local capital and increasing self-reliance, and with that higher recognition and more time will be dedicated toward getting more resilient, and they will become more resilient. But, there are way more that are vulnerable than resilient.”
- Several locations were noted by multiple interviewees.

⁸ In February 1977, the United States District Court for the Eastern District of Virginia fined Allied Chemical Corporation \$13.2 million for polluting the James River with the insecticide Kepone. www.vee.org/about/history/

1. Elkhart, IN
2. Jacksonville, FL
3. British Columbia
4. East Central Vermont: Addison, Orange, Rutland (particularly), Windsor Counties
5. Southwest VA (counties of Wise, Russell, Scott and Tazewell; towns of Wise and Norton)
6. Athens County, OH
7. Chattanooga, TN
8. Maine Fisheries: (counties of York, Cumberland, Sagadahoc, Lincoln, Knox, Waldo, Hancock, Washington Counties)
9. PA WILDS (counties of Cameron, Centre, Clarion, Clearfield, Clinton, Elk Forest, Jefferson, Lycoming, McKean, Potter, Tioga, and Warren)
10. Rutland, VT
11. Beckley, WV
12. Morganton, NC
13. Mingo County WV
14. Gilbert, WV
15. Asheville, NC
16. Greenbrier County
17. Eastern KY Counties: (Especially the town of Whitesburg)
18. Fayetteville, WV
19. Charleston, WV
20. Huntington, WV
21. Tri-Cities: Johnson City, TN, Bristol and Kingsport, VA
22. Danville, PA
23. Bloomsburg, PA
24. Columbia, PA
25. Ohiopyle, PA
26. Fayette County, PA
27. Tupelo, MS
28. Oxford, MS
29. Florence, MS
30. Mussell Shoals, MS
31. Bucksport, ME
32. Dickinson County, IA
33. Cleveland, OH
34. Sparksville, MO
35. Columbus, MO
36. Roanoke, VA
37. Blacksburg, VA
38. Louisville, KY
39. Marion, VA
40. Moorehead, MN
41. Belfast, ME
42. Damariscotta, ME
43. Pittsburgh, PA
44. Rock Castle County, KY
45. Lawrence, KS
46. Beckwith County, KS
47. Buckhannon, WV
48. Grafton, WV
49. Wheeling, WV
50. Williamson, WV
51. Princeton, WV
52. Fairmont, WV
53. Bellingham, Washington

Interviewees include:

1. Jonathan Belcher, Executive Director, Virginia Coalfield Economic Development Authority
2. Dee Davis, President, Center for Rural Strategies
3. Ta Enos, Executive Director, PA Wilds Center
4. Anthony Flaccavento, President, Rural Scale
5. Michelle Foster, President and CEO, The Greater Kanawha Valley Foundation
6. Peter Hille, President, MACED
7. William Isom, Sustainable and Equitable Agricultural Development Task Force
8. Leasha Johnson, Executive Director, Mingo County RDA
9. Jake Lynch, Director of Network Communications, WV Community Development Hub
10. Deborah Markley, Managing Director, Center for Rural Entrepreneurship
11. Erik Pages, President, EntreWorks Consulting
12. Leslie Schaller, Director of Programs, Appalachian Center for Economic Networks
13. Ada Smith, Institutional Development Director, Appalshop
14. Kent Spellman, Consultant, Rails-To-Trails Conservancy
15. Tom Torres, Vice Chair of the Appalshop Board Executive Committee
16. Stephanie Tyree, Executive Director, WV Community Development Hub
17. Bonnie Swinford, Tennessee Chapter of Sierra Club
18. Thomas Watson, Executive Director, Rural Support Partners
19. Barbara Wycoff, Executive Director, One Foundation

Interview questions included:

1. Tell me a little about yourself and your background - how are you working with community building and economic resilience in your local area?
2. How would you rate own community's level of resiliency on a five-point scale (1 being the least resilient, 5 being the most resilient)?
3. What has created the greatest positive change in your community or region over time? What have been the greatest challenges and untapped opportunities?
4. What have been the biggest points of inspiration (people, places, or ideas) in your community -- or beyond your community -- that you have drawn from?
5. What tools or resources have been the most important leverage points for creating resilience in your community (these might include a funding or agency resource, decision-making process, or best practice)?
6. What have been your greatest lessons learned over time?
7. What advice or ideas would you offer to other practitioners or community leaders as they work to building thriving communities and regions?
8. What tools or resources do you think would be the most helpful for community leaders and practitioners to build economic resilience in their communities? What specific formats would be the most helpful in creating a practitioner guidebook?
9. Who else do you think should be involved or consulted in this effort?
10. Are there any other ideas, best practices, or examples of resilient communities that you would like to share?

APPENDIX C: ADVISORY TEAM CALL SUMMARIES

Advisory Team call summary

February 6, 2017

For Strengthening Economic Resilience in Appalachian Communities

The first call of the Advisory Team for the *Strengthening Economic Resilience in Appalachian Communities* project was held on Monday, February 6, 2017. Advisory Team call participants are listed at the end of the summary. Christine Gyovai of Dialogue + Design Associates welcomed participants to the call and gave an overview of the Advisory Team focus. Fritz Boettner of Downstream Strategies then gave an overview of the project and project deliverables (see the project description below). Participants then introduced themselves, and Christine gave an overview of the initial strategies and best practices for the effort. Finally, Stephan Goetz of the Northeast Regional Center for Rural Development at Penn State provided an overview of the initial economic analysis findings, and participants shared their feedback around both the initial qualitative and quantitative findings. The next Advisory Team call will be in mid-spring 2017, and the third and final Advisory Team call will be in early summer 2017. Below are highlights from the Advisory Team call.

Project overview and Introductions

In addition to sharing names and affiliations, Advisory Team members shared their favorite Appalachian town to visit at the beginning of the call which included: Fayetteville, WV; Thomas and Davis, WV; Johnstown, PA; St. Paul, VA; Harpers Ferry, WV; Slade, KY; Elkhorn City and Breaks Interstate Park, KY; Waterford, OH; High Knob area at Bark Camp Lake, VA; Whitesburg, KY; the Wild Ramp in Huntington, WV; and Pittsburg, PA.

Fritz then provided an overview of the project and project approach (which may be found in the attached project highlights document, which was shared with Advisory Team members in advance of the call). One Advisory Team member noted that it is a challenge to delineate what we mean by resilience and how we define it, noting that resilience could refer to the ability of a community to use a shock as an opportunity to “bounce forward,” not just “come back.”

Draft strategies and best practices

Christine then provided an overview of the draft strategies and best practices for the project (included in the project highlights document below). Advisory Team (AT) member questions and feedback included:

- One of the greatest challenges in this work is in how we can change mindsets in the community, visioning how communities can be reimagined for growth. Learning how other communities have done this would be helpful.
- For another AT member, regarding changing mindsets, one of the one of the biggest take-aways from a recent ARC meeting for POWER grantees with very impressive “younger generation” folks from KY, WV (including from the WV Hub) and others who are spreading amazing personal stories and saying that we need to get away from “poverty porn”. We need to share the very positive real faces and real people and positive stories.”
- Another participant noted that it is difficult for community members to change their mindsets – it is hard to get people to change what they are used to doing.

Several AT members noted the importance of “changing the narrative”. One participant noted that in Appalachia there is a strong legacy and inherent nature of storytellers that can be built on with “networks of networks of storytellers coming together.” Some resources and examples of this include the Central Appalachian Network (CAN), which created a video a few years ago around local food value chains, grounded in WealthWorks metrics (which were made by Curtis Creative). “We need to use media in new ways to get stories out and shift the narrative at a grassroots level.” Additional AT member feedback included:

- Some communities in Mingo County are doing a good job in changing the narrative by rebranding and recreating who we are through a grassroots effort with community buy-in. There has been resistance of community members as well; there is a strong recognition of the important heritage and backbone of coal in the region, but also a need to look to the future. At the Williamson Health and Wellness Center, community members are working to build a culture of health by addressing long-term health issues. Several small business start-ups have resulted from Wellness Center initiatives and from building out networks, as well as from implementing broadband strategies and finding ways to change the narrative and offer long term-term ideas for sustainable growth.
- In eastern Kentucky, the way state-led economic development infrastructure is conducted can be problematic. Economic development efforts in southwest Virginia have had more support from the state level.
- At the state policy level, state Economic Development cabinets for economically distressed communities could be a supportive driver for growing economic resilience.
- State Economic Development Authority, including commerce and infrastructure departments, could developed as a potential case study. Recently in WV, there has been new collaboration with the Dept. of Commerce and the work of the WV Community Development Hub to share ideas around transition work and economic development work for possible policy recommendations. This took the organization of the networks of people (not just one entity and organization, but a series of entities and towns that are working together).

- We need to focus on the assets that we have in the community, and how to encourage state-level economic development entities to reflect both short-term and long-term innovative solutions that arise from within communities. There is a sense of urgency to create real economic growth and resilience in many communities that have been devastated by coal-related job loss, as well as to build long-term solutions that consider the heritage of the region.
- There may be a time and place to consider that, for some communities, coming back isn't the right solution. There may be a need for some community members to move on as growing resilience really isn't an option. We need to support people in changing their communities, but that also might include moving away – not just focusing on ways a community can bounce back.
- One element that is woven throughout supporting the economic development capacity of communities is to have a good, paid, skilled practitioner doing the work who can provide key training, grow support, and build capacity in communities.

Project team members then noted that the team is developing case studies for the effort as well. Finally, the primary product of the effort is a Practitioner Guidebook for economic development practitioners, which could include web, infographic, print or possibly video components. The Project Team welcome AT suggestions for most useful formats and outreach methods for guidebook.

Quantitative Analysis initial approach and findings

Stephan then gave an overview of the Quantitative Analysis initial approach and findings, which is included on the project highlights document below. Advisory Team member questions and feedback included:

- The WealthWorks metrics might be helpful in measuring social capital (Wealthworks.org). There has been a significant information gathering in southeast Ohio around leverage what interactions build strong social capital. One of the experiences at ACE-NET that might be valuable is around the long-term relationships with clients and tenants, and the ability to measuring more specific impacts of WealthWorks forms of capital -- which has strongly informed their work -- particularly around the food sector. Measuring social capital has been important, and the challenge has been how to scale it up to think and act across the region.
- Having more baseline economic data and information around economic resilience would be very helpful. Poverty statistics are so prominent, and elected officials are making promises but we don't have a baseline to measure policy or legislative impacts against. Some of the data around national rural economic development and future projections are now being scrutinized in more detail. For example, national retail density assumptions were made and used extensively in rural areas to create economic development plans around reviving the retail sector, but we need to look at that strategy more closely to see if it is really viable. If the retail sector is declining, we need to develop alternative economic growth plans such as around health care.

Next steps and follow up

At the end of the Advisory Team call, Project Team members shared next steps for the project outreach which included conducting interviews, a digital engagement, and a Focus Group. Future Advisory Team calls will be in mid-spring and in late June 2017.

Participants from the Feb. 6 Advisory Team call

Youth

Eric Dixon, Appalachian Citizen Law Center

Representing Philanthropic Foundations

Justin Maxson, Mary Reynolds Babcock Foundation

Barbara Wycoff, One Foundation

Representing Community Groups

Dee Davis, Center for Rural Strategies

Peter Hille, Mountain Association for Community Economic Development

Debra Horne, Mayor, Town of Dungannon, VA

Leslie Schaller, Appalachian Center for Economic Networks

Universities

Shannon Blevins, University of Virginia's College at Wise

Jennifer Simon, Ohio University

Local Development

Leasha Johnson, Mingo County Redevelopment Authority

Project Team members

Fritz Boettner, Downstream Strategies

Stephan Goetz, Penn State

Christine Gyovai, Dialogue + Design Associates

Advisory Team and Project Overview for the Strengthening Economic Resilience in Appalachian Communities project overview

The Advisory Team for the Economic Resilience project will be comprised of a dozen key advisors with experience in economic resilience and building thriving communities. This Economic Resilience project, sponsored by the Appalachian Regional Commission, will explore and document strategies and policies local leaders can use to enhance the future economic prospects of coal-impacted communities throughout the Appalachian Region.

FRITZ There are four key components to this research project: 1) develop a comprehensive, quantitative framework to explore economic resilience; 2) identify a series of best-practice strategies for strengthening local economic resilience; 3) conduct up to 10 in-depth case studies; and 4) produce a concise guidebook that interprets and integrates findings of the research, written specifically for local economic development practitioners.

Advisory Team members will give input at key points in the project around the approach of the quantitative and qualitative analyses, web-based survey, Focus Group development, and final Guidebook and Final Report development, and other potential areas. Three conference calls will be held with the Advisory Team during each of the three overarching phases of the project, with conference calls likely held in late January or early February 2017, early April 2017, and late June 2017.

Advisory Team call summary

June 8, 2017

For the Strengthening Economic Resilience in Appalachian Communities project

The third call of the Advisory Team for the *Strengthening Economic Resilience in Appalachian Communities* project, sponsored by the Appalachian Regional Commission, was held on June 8, 2017. The first Advisory Team call was held in February of 2017, and the second call was held as part of a broader Focus Group webinar in April of 2017. The June 8th call was moderated by Christine Gyovai of Dialogue + Design Associates. A complete list of participants is available at the end of this document.

Christine opened the call by summarizing the state of the project thus far. She then reviewed that agenda and purpose for the call which was to: 1) updated the Advisory Team about the draft best practices and strategies which were being shared in a survey across Appalachia, and 2) to solicit feedback from the Advisory Team about how best to integrate the quantitative analysis with the qualitative analysis for the practitioner guidebook (one of the outputs of the project).

Christine then presented a summary of the quantitative analysis to date. Following this, Stephan Goetz and Alan Collins presented the final results of their respective quantitative modeling of resilience in a PowerPoint presentation.

Christine then welcomed feedback from Advisory Team members on the economic analysis findings and around the questions:

- How to best communicate the economic analysis findings in the practitioner guidebook?
- What information do economic development practitioners most need? In what formats?
- How should information be shared in the practitioner guidebook?
- Additional suggestions and ideas

Stephan noted that it is interesting that self-employment doesn't rise to the top of important factors, but business density is broadly positive; business density values should require self-employment to grow. Christine then commented that community and economic development practitioners have found that access to rationalizing approaches to build economic resilience from economists is valuable.

Following the presentation, Advisory Team (AT) members had the following questions and comments:

- An AT member asked: “What is employment – how is it characterized?” Stephan answered that this is BLS monthly employment data. A follow-up question was asked if part-time employment is included in these numbers? Stephan was unsure, and offered to follow up.
- A question was raised if there is a step beyond these analyses, noting that the quantitative models raise more questions than answers, and that many of these things are confusing because statistical truths don’t translate into knowledge and he recommended creating a clear distinction of observable correlations that promote resilience and illustrate viable strategies.
- An AT member commented that the team should be careful in the narrative to explain variables and analysis and ensure the message is not “these things [that aren’t significant or have negative signs in the equations] aren’t viable strategies – it’s much more complicated than that.”
- Stephan noted that the quantitative team tried to introduce time lag to demonstrate more clear cut cause and effect relationships, but that it will need to be more clearly explained in the narrative.
- A comment was noted that from the point of view of traditional economic development practitioners, these findings are important and some of them emphasize the positivity of existing efforts. He also noted that perhaps self-employment lag effect is very large and not measured here.
- A question arose: “What is innovation potential?” Stephan responded by noting that this is the number of firms in a county engaged in “process innovation.” This is a summation of firms that buy from many other firms and those that sell to many other firms. It is developed with an input-output table of buying and selling. It is a very new statistic and is under peer review currently, but it seems to show new information about the capacity for innovation in a county.
- Christine commented that we need to ensure that we define things very clearly and asked for input on methods of sharing results.
- Another AT member responded by stating that it is hard to know how this information will be translated into actionable intelligence and that these presentations weren’t a sufficient platform for response to the question about how to share the information.
- A question was asked: “Why are none of these variables about politics?” Stephan answered that we used voting competitiveness and that we see tighter margins of this variable as indicative of more willingness among legislators to produce tangible results. This has been demonstrated an important variable elsewhere, but didn’t show up here.
- A participant responded by asking about other visible political phenomenon such as corruption. They continued by citing a book about rural development in which the author discusses corruption as an under-reported phenomenon that really hurts

development projects. The author notes that poor communities outside of Appalachia have done better with the same amount of money. Christine noted that similar questions were raised in the qualitative work.

- Stephan noted that there is a literature on distance from state capitals and how it relates to corruption, but the group hadn't considered that variable.

At the end of the call, the Project Team thanked the Advisory Team for their time, and noted that they would be following up with the draft Guidebook for early review in the near future.

Call Participants

Eric Dixon, Appalachian Citizen Law Center
Justin Maxson, Mary Reynolds Babcock Foundation
Dee Davis, Center for Rural Strategies
Peter Hille, Mountain Association for Community Economic Development
Debra Horne, Mayor, Town of Dungannon, VA
Leslie Schaller, Appalachian Center for Economic Networks
Shannon Blevins, University of Virginia's College at Wise
Jennifer Simon, Ohio University
Jim Baldwin, Cumberland Plateau Planning District Commission
Evan Fedorko, Downstream Strategies
Evan Hansen, Downstream Strategies
Christine Gyovai, Dialogue + Design Associates
Stephan Goetz, Penn State University
Allan Collins, West Virginia University

APPENDIX D: PRACTITIONER SURVEY

Strengthening Economic Resilience in Appalachia

Project Overview

Thank you for providing your feedback on how to grow economic resilience in Appalachia by June 14. This project, sponsored by the Appalachian Regional Commission, is being conducted by Downstream Strategies, Penn State, and Dialogue + Design Associates and other partners, and has four key elements: 1) develop a comprehensive economic analysis to explore economic resilience; 2) identify a series of best-practice strategies for strengthening local economic resilience; 3) conduct up to 10 in-depth case studies; and 4) create a user-friendly guidebook geared toward local economic development practitioners by the fall of 2017. **Your feedback is a key element of the guidebook development, and we value your ideas and input! These questions are geared toward the strategies, best practices, and ideas for policies and implementation for the guidebook.** If you have any questions about the survey, please contact Christine at info@dialogueanddesign.com.



* 1 What is your zip code?

* 2 How would you rate your own community's level of economic resilience, or ability to bounce back (or bounce forward) from an economic shock?

Not at all strong

Extremely strong

* 3 Which draft best practices below are the best ways to grow economic resilience in Appalachia? (Related strategies are below for optional feedback.)

	Low		Medium		High
1. Cultivate entrepreneurs and develop resources for business start-ups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Identify and grow the assets in the community and region	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Invest in education, technology, infrastructure and broadband	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Move multiple sectors forward for economic development and grow value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

chains

5. Grow youth engagement and next generation leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Build networks and foster collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Create communities where people want to live	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Engage the community over the long-term	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

4 What are the most effective ways for these best practices and strategies to be implemented in communities and regions in Appalachia (select up to three)?

- ☐ State Economic Development Agency involvement
- ☐ Focus on helping community members meet basic needs first, especially in poorest communities
- ☐ Grassroots, collaborative efforts to build local economies
- ☐ Working with an individual, organization or entity to help facilitate, build capacity, and assist communities implement the ideas that arise from within the community
- ☐ Working through established or new networks such as the Central Appalachian Network, the Community Economic Development Network of eastern Tennessee, or others
- ☐ Work in partnership with colleges – from community colleges to universities

Other (please specify)

5 Who can most effectively grow the economic resilience in your community or region?

	Low effectiveness		Medium effectiveness		High effectiveness
Small Business Development Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
State Economic Development Agency or Partnership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Academic Institution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Main Street Manager for your community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business coach or entrepreneurship program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grassroots coalition or collaborative effort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elected leaders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)



6 Which of these economic models and solutions are most important to grow economic resilience (select up to three)?

- ☐ Creating tax incentives and financing packages to attract new businesses
- ☐ Fostering new entrepreneurs
- ☐ Expanding workforce development opportunities
- ☐ Grassroots collaborative efforts
- ☐ Retraining displaced workers
- ☐ Building social enterprises
- ☐ Worker-owned businesses or cooperatives
- ☐ Expanding existing businesses
- ☐ Recruiting new businesses via other means
- ☐ Other, including policies (please specify)

7 What are the most important tools and resources to build economic resilience (select up to three)?

- ☐ Learning about how other communities have strengthened their economic resilience
- ☐ Business accelerators and business incubators
- ☐ Capacity-building and learning opportunities such as webinars
- ☐ Federal, state or private funding through large grants
- ☐ Federal, state or private funding through small mini-grants and technical assistance
- ☐ Working with elected leaders to create change
- ☐ Creating new policies and legislation to create the change that is most needed
- ☐ Becoming designated as a Main Street Community
- ☐ Dedicated opportunities for youth and youth leadership
- ☐ Working as a region and across town or county lines
- ☐ "Learn and earn" models of workforce training where workforce training and academic classes are both offered around a specific topic such as local food or renewable energy

Other, including policies (please specify)

8 What affiliation best describes you?

Community member	Elected official	Non-profit organization	Federal, state, or local agency staff member	Other
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9 Which age range are you in?

10 - 20 years	20 - 30 years	30 - 40 years	40 - 50 years	50 - 60 years	60 - 70+ years
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10 How long have you been engaged in building economic resilience in your community?

Less than one year	1-2 years	2-3 years	3-4 years	5+ years
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How are you engaged?

11 How can this economic resilience practitioner guidebook be of greatest value to you and your community?

12 Would you describe yourself as:

- ☐ American Indian or Native American
- ☐ Asian
- ☐ Black or African American
- ☐ Latino or Hispanic
- ☐ White or Caucasian
- ☐ Other (please specify)

13 **OPTIONAL questions** below around strategies to build economic resilience: **For best practice #1, Cultivate entrepreneurs and develop resources for business start-ups**, which of the following related strategies are the most important (select up to two)?

- ☐ A. Connect with schools, colleges and universities for training, mentoring, and research opportunities.
- ☐ B. Develop entrepreneur resources, business plan competitions, and opportunities to grow local businesses and access capital.
- ☐ C. Advance opportunities for workforce training in specific sectors and industries including for regional context and displaced workers.
- ☐ D. Use social enterprise resources and tools to develop community-based businesses.
- ☐ E. Develop opportunities for remote work and telecommuting.
- ☐ F. Create entrepreneurial ecosystems with locally-centered markets.

Other (please specify)

14 **For best practice #2, Identify and grow the assets in the community and region**, which of the following related strategies are the most important (select up to two)?

- ☐ A. Identify and promote assets within the region and community through partnerships.
- ☐ B. Link multiple destinations and activities to create more local business opportunities and encourage longer visits.
- ☐ C. Tell the stories of the community, especially positive stories, to change the narrative.
 - o Create intergenerational learning exchanges between elders and youth as well as learning opportunities between towns and practitioners.
- ☐ D. Share resources across the region such as marketing resources or research into regional trends.
- ☐ E. Foster interconnection between rural and urban areas, in broader regions around resources, as well as food, recreation, and energy supply connections.

Other (please specify)



15 For best practice #3, Invest in education, technology, infrastructure and broadband, which of the following related strategies are the most important (select up to two)?

- ☐ A. Develop broadband accessibility throughout Appalachia.
- ☐ B. Foster educational opportunities from preschool – post-secondary for a wide range of community members.
- ☐ C. Invest in infrastructure including public water, public sewer, energy accessibility, and transportation (including multi-modal transportation).
 - o Many businesses have a renewable energy requirement to locate in an area.
- ☐ D. Grow opportunities around technology in multiple sectors.

Other (please specify)

16 For best practice #4, Move multiple sectors forward for economic development and grow value chains, which of the following related strategies are the most important (select up to two)?

- ☐ A. Develop a coordinated strategy for economic growth.
- ☐ B. Connect to regional markets for sales of products and services.
 - o Grow and connect with the broader region's economy and to market opportunities in regional urban centers.
- ☐ C. Build grassroots support for economic diversification, and collaborate with public and private sectors.
- ☐ D. Learn how other communities and regions built economic growth and share ideas.
- ☐ E. Promising sectors include:
 - o Advanced manufacturing, health care, renewable energy, outdoor recreation, local food systems and agriculture, technology and others.
- ☐ F. Connect multiple opportunities to grow a value chain around what is being created locally.
 - o Use a systems approach to develop value chains; look across a region to determine what levers can grow economic resilience.
 - o Develop a broader recognition of the interdependence between urban and rural areas. Create a deeper recognition of the value of rural.

Other (please specify)

17 For best practice #5, Grow youth engagement and next generation leadership, which of the following related strategies are the most important (select up to two)?

- ☐ A. Develop programs by youth, for youth.
- ☐ B. Engage youth in arts, culture and community-building opportunities.
- ☐ C. Identify, mentor, and grow young leaders for the next generation.
 - o Develop mentoring, learning opportunities, idea exchanges and programs to grow skills and to learn about entrepreneurship (like Appalachian Fellowship Program and across generations)
 - o Connect to schools and work with teachers, students, parents in multiple ways.
- ☐ D. Welcome young people in communities – ensure that youth feel welcome.
- ☐ E. Keep smart, young people in communities, and bring smart, young people from outside of communities in.
- ☐ F. Welcome new ideas, bold visions, and unlikely partnerships.

Other (please specify)

18 For best practice #6, Build networks and foster collaboration, which of the following related strategies are the most important (select up to two)?

- ☐ A. Identify and grow a dedicated entity or anchor organization(s) to:
 - o Build capacity, move ideas forward, provide a consistent forum for collaboration, develop multiple funding streams, and help implement ideas.
- ☐ B. Work across silos and sectors; encourage entrepreneurial spirit and mindsets.
- ☐ C. Develop networks of communities working together and sub-regional networks.
- ☐ D. Develop long-term staffing capacity to move ideas forward.
- ☐ E. Cultivate grassroots efforts and community leadership, and effective communication using different

tools

- ☐ F. Use a systems approach to develop a shared understanding community opportunities and needs, to grow sectors, develop assets, and foster regional collaboration with long-term vision and effort.
o Engage economists at the regional scale to share knowledge and best practices.

Other (please specify)

19 For best practice #7, Create communities where people want to live, which of the following related strategies are the most important (select up to two)?

- ☐ A. Cultivate a strong sense of place and pride in place through storytelling, arts, and cultural heritage opportunities
- ☐ B. Value arts, culture, and heritage and use them as building blocks for a new economy in Appalachia. Tell stories, share stories, including new, positive stories.
- ☐ C. Grow community health and wellness.
o Create programs and opportunities specifically for childcare, elder care, women, single-parent households, and vulnerable community members to ensure that basic needs are met.
o Create high quality communities with amenities for all community members.
- ☐ D. Promote local investing via community foundations and seed funding for local ideas
- ☐ E. Welcome new and diverse people into communities. Encourage new residents, including telecommuters, young families, and immigrants.
- ☐ F. Grow anchor institutions and businesses that grow communities (i.e. a college, university, hospital, elder/youth co-care opportunities)

Other (please specify)

20 For best practice #8, Engage the community over the long-term, which of the following related strategies are the most important (select up to two)?

- ☐ A. Develop a consistent forum for community engagement around a specific focus with a long-term facilitator or convener.
- ☐ B. Share ideas, challenges and successes with consistent communication with the broader community.
- ☐ C. Cultivate leadership and trust for long-term efforts and success.
- ☐ D. Lead from the middle. Create the space where leadership can come forward and flourish to create change together.
- ☐ E. Create ongoing engaging, safe spaces for the community to gather across sectors and for all community members to feel valued, welcomed, & heard.
- ☐ F. Engage under-engaged community members (those affected by decisions need to be part of the solution).
- ☐ G. Connect with community sparkplugs and bridgemaekers in the community to sustain leadership, growth and momentum.
- ☐ Other (please specify)

21 How would you rate the following quality of life characteristics in your community on a scale of one to five (one being low quality or availability, five being high quality or availability):

	Low quality or availability		Medium quality or availability		High quality or availability
Child care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elder care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health care practitioners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education availability (K-12 grade)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education quality (K-12 grade)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education availability (college+)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education quality (college+)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outdoor recreation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Environmental quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sense of community (neighbors know one another, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of jobs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

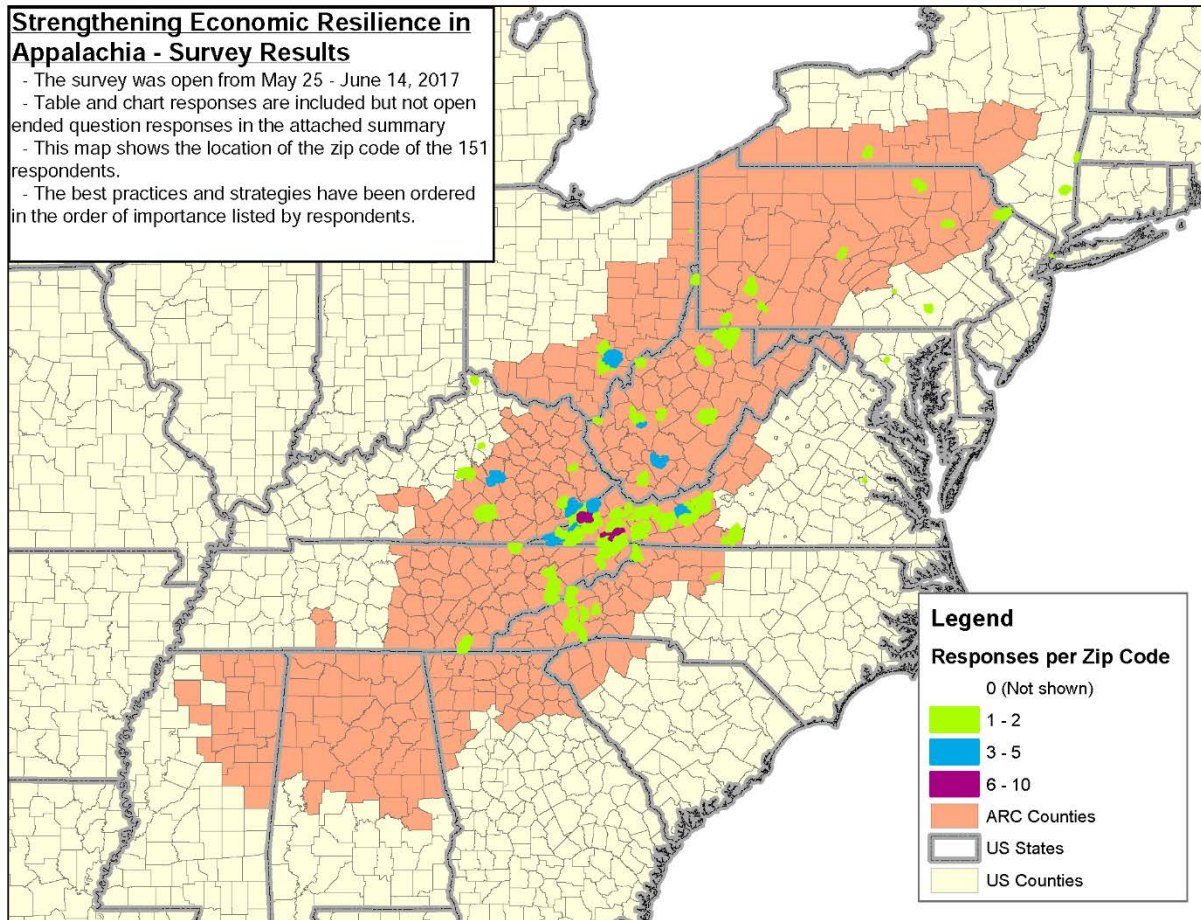
- 22 Feel free to share your email address if you'd like to receive a digital copy of the guidebook once it is complete, or any other ideas and feedback to strengthen economic resilience in Appalachia. Thank you for your feedback and participation.



Done

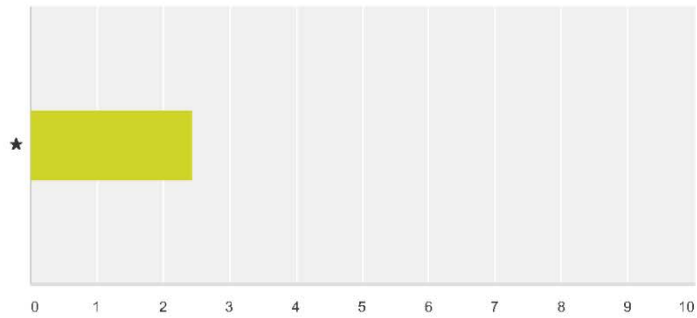
Strengthening Economic Resilience in Appalachia - Survey Results

- The survey was open from May 25 - June 14, 2017
- Table and chart responses are included but not open ended question responses in the attached summary
- This map shows the location of the zip code of the 151 respondents.
- The best practices and strategies have been ordered in the order of importance listed by respondents.



Q2 How would you rate your own community's level of economic resilience, or ability to bounce back (or bounce forward) from an economic shock?

Answered: 146 Skipped: 5

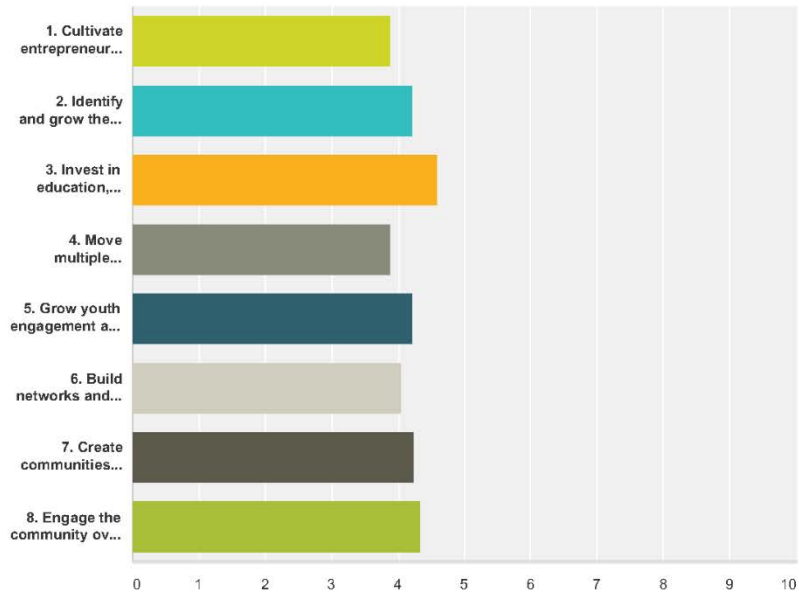


	Not at all strong	(no label)	(no label)	(no label)	Extremely strong	Total	Weighted Average
★	23.29% 34	28.08% 41	30.82% 45	16.44% 24	1.37% 2	146	2.45

Strengthening Economic Resilience in Appalachia

Q3 Which draft best practices below are the best ways to grow economic resilience in Appalachia? (Related strategies are below for optional feedback.)

Answered: 151 Skipped: 0

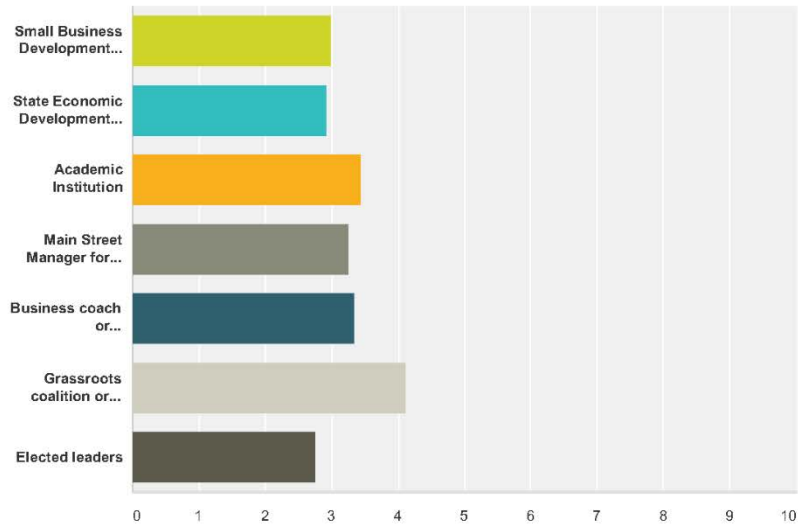


	Low	(no label)	Medium	(no label)	High	Total	Weighted Average
1. Cultivate entrepreneurs and develop resources for business start-ups	4.67% 7	5.33% 8	26.00% 39	25.33% 38	38.67% 58	150	3.88
2. Identify and grow the assets in the community and region	1.33% 2	4.00% 6	16.67% 25	28.00% 42	50.00% 75	150	4.21
3. Invest in education, technology, infrastructure and broadband	1.32% 2	0.66% 1	6.62% 10	19.87% 30	71.52% 108	151	4.60
4. Move multiple sectors forward for economic development and grow value chains	1.38% 2	6.21% 9	26.90% 39	33.10% 48	32.41% 47	145	3.89
5. Grow youth engagement and next generation leadership	1.99% 3	3.31% 5	16.56% 25	27.15% 41	50.99% 77	151	4.22
6. Build networks and foster collaboration	2.65% 4	1.99% 3	24.50% 37	30.46% 46	40.40% 61	151	4.04
7. Create communities where people want to live	1.32% 2	7.28% 11	9.93% 15	29.14% 44	52.32% 79	151	4.24
8. Engage the community over the long-term	1.32% 2	3.31% 5	11.92% 18	26.49% 40	56.95% 86	151	4.34

Strengthening Economic Resilience in Appalachia

Q5 Who can most effectively grow the economic resilience in your community or region?

Answered: 151 Skipped: 0

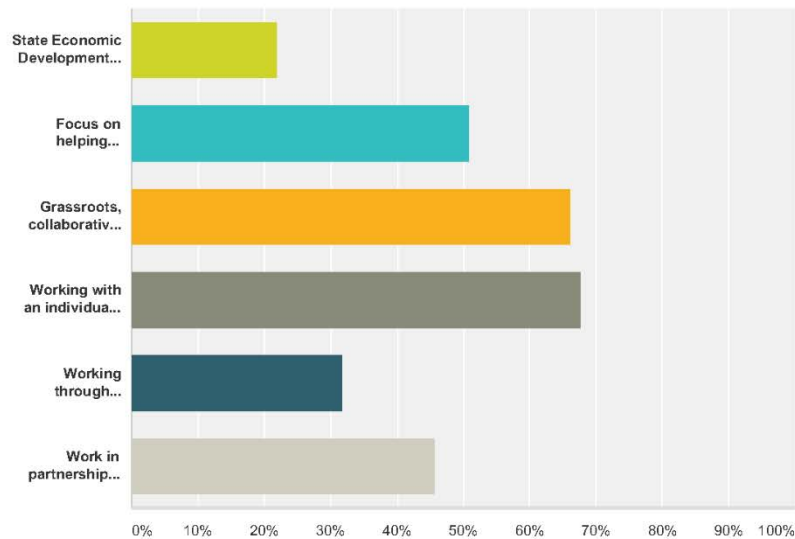


	Low effectiveness	(no label)	Medium effectiveness	(no label)	High effectiveness	Total	Weighted Average
Small Business Development Center	12.24% 18	17.01% 25	39.46% 58	21.77% 32	9.52% 14	147	2.99
State Economic Development Agency or Partnership	10.34% 15	24.83% 36	35.17% 51	20.69% 30	8.97% 13	145	2.93
Academic Institution	2.72% 4	12.93% 19	35.37% 52	36.05% 53	12.93% 19	147	3.44
Main Street Manager for your community	9.93% 14	13.48% 19	34.75% 49	24.82% 35	17.02% 24	141	3.26
Business coach or entrepreneurship program	5.48% 8	17.81% 26	29.45% 43	32.19% 47	15.07% 22	146	3.34
Grassroots coalition or collaborative effort	2.72% 4	5.44% 8	10.88% 16	38.78% 57	42.18% 62	147	4.12
Elected leaders	21.09% 31	23.81% 35	24.49% 36	19.05% 28	11.56% 17	147	2.76

Strengthening Economic Resilience in Appalachia

Q4 What are the most effective ways for these best practices and strategies to be implemented in communities and regions in Appalachia (select up to three)?

Answered: 151 Skipped: 0

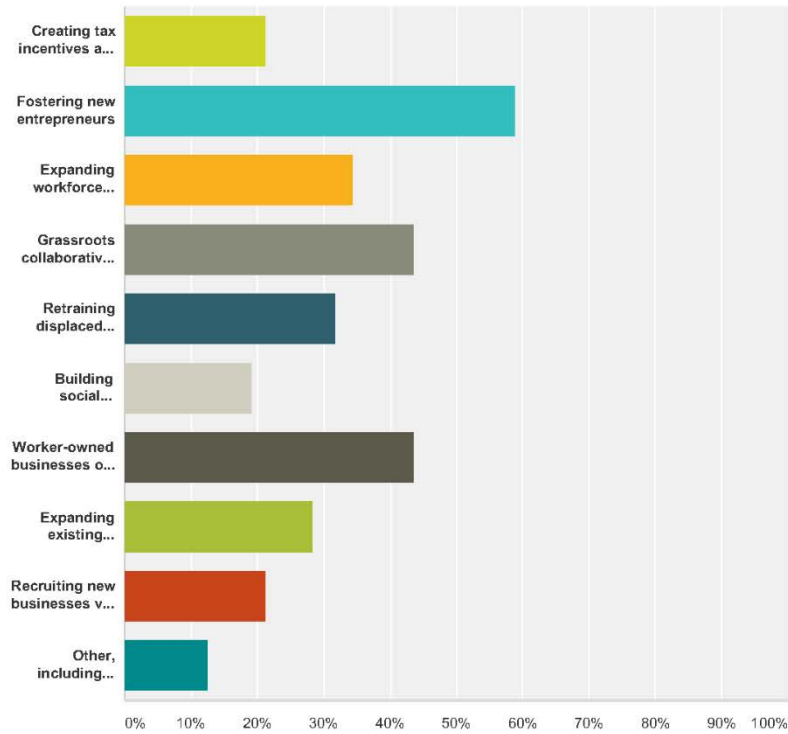


Answer Choices	Responses
State Economic Development Agency involvement	21.85% 33
Focus on helping community members' meet basic needs first, especially in poorest communities	50.99% 77
Grassroots, collaborative efforts to build local economies	66.23% 100
Working with an individual, organization or entity to help facilitate, build capacity, and assist communities implement the ideas that arise from within the community	67.55% 102
Working through established or new networks such as the Central Appalachian Network, the Community Economic Development Network of eastern Tennessee, or others	31.79% 48
Work in partnership with colleges – from community colleges to universities	45.70% 69
Total Respondents: 151	

Strengthening Economic Resilience in Appalachia

Q6 Which of these economic models and solutions are most important to grow economic resilience (select up to three)?

Answered: 151 Skipped: 0



Answer Choices	Responses	
Creating tax incentives and financing packages to attract new businesses	21.19%	32
Fostering new entrepreneurs	58.94%	89
Expanding workforce development opportunities	34.44%	52
Grassroots collaborative efforts	43.71%	66
Retraining displaced workers	31.79%	48
Building social enterprises	19.21%	29
Worker-owned businesses or cooperatives	43.71%	66
Expanding existing businesses	28.48%	43
Recruiting new businesses via other means	21.19%	32

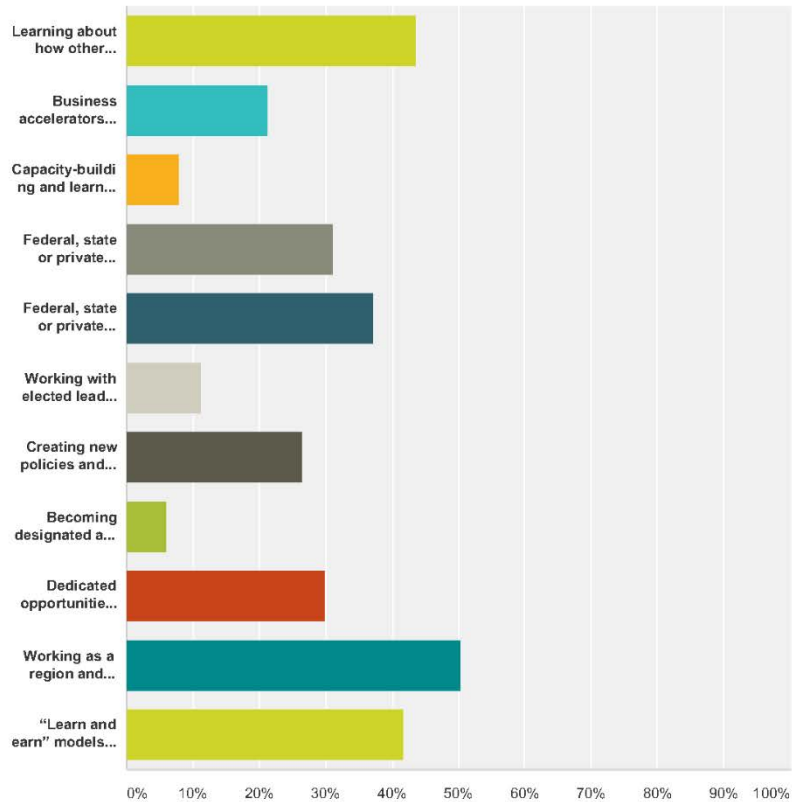
Strengthening Economic Resilience in Appalachia

Other, including policies (please specify)	12.58%	19
Total Respondents: 151		

Strengthening Economic Resilience in Appalachia

Q7 What are the most important tools and resources to build economic resilience (select up to three)?

Answered: 151 Skipped: 0



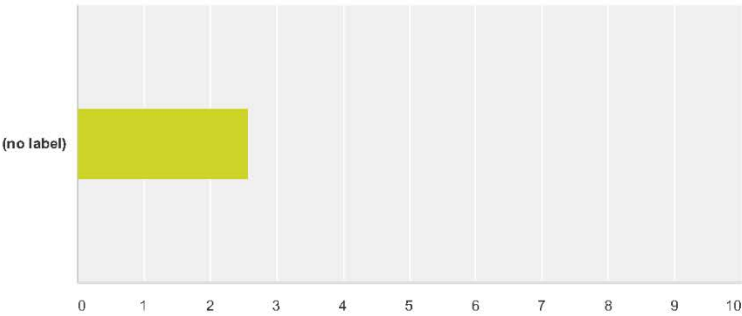
Answer Choices	Responses
Learning about how other communities have strengthened their economic resilience	43.71% 66
Business accelerators and business incubators	21.19% 32
Capacity-building and learning opportunities such as webinars	7.95% 12
Federal, state or private funding through large grants	31.13% 47
Federal, state or private funding through small mini-grants and technical assistance	37.09% 56
Working with elected leaders to create change	11.26% 17

Strengthening Economic Resilience in Appalachia

Creating new policies and legislation to create the change that is most needed	26.49%	40
Becoming designated as a Main Street Community	5.96%	9
Dedicated opportunities for youth and youth leadership	29.80%	45
Working as a region and across town or county lines	50.33%	76
"Learn and earn" models of workforce training where workforce training and academic classes are both offered around a specific topic such as local food or renewable energy	41.72%	63
Total Respondents: 151		

Q8 What affiliation best describes you?

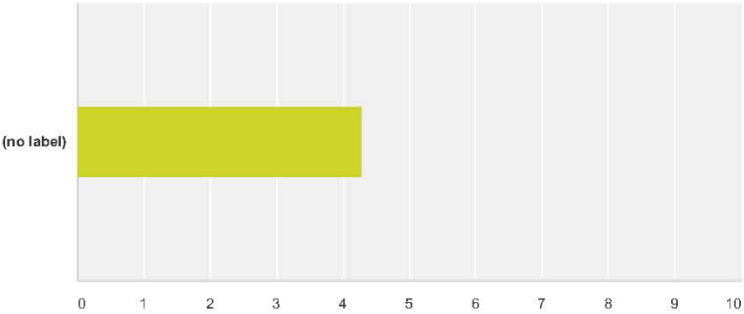
Answered: 151 Skipped: 0



	Community member	Elected official	Non-profit organization	Federal, state, or local agency staff member	Other	Total	Weighted Average
(no label)	39.74% 60	2.65% 4	30.46% 46	15.23% 23	11.92% 18	151	2.57

Q9 Which age range are you in?

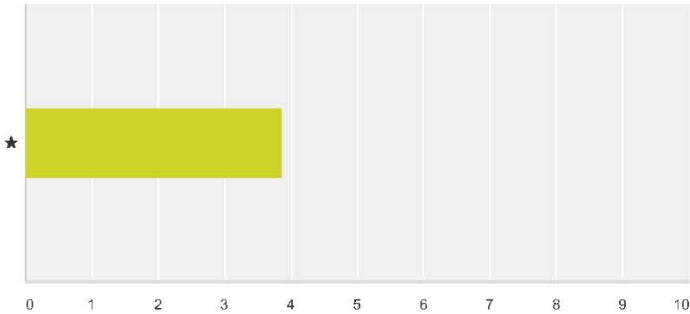
Answered: 151 Skipped: 0



	10 - 20 years	20 - 30 years	30 - 40 years	40 - 50 years	50 - 60 years	60 - 70+ years	Total	Weighted Average
(no label)	0.00% 0	12.58% 19	24.50% 37	13.25% 20	21.19% 32	28.48% 43	151	4.28

Q10 How long have you been engaged in building economic resilience in your community?

Answered: 145 Skipped: 6



	Less than one year	1-2 years	2-3 years	3-4 years	5+ years	Total	Weighted Average
★	12.41% 18	10.34% 15	13.10% 19	6.21% 9	57.93% 84	145	3.87

Strengthening Economic Resilience in Appalachia

Q11 How can this economic resilience practitioner guidebook be of greatest value to you and your community?

Answered: 81 Skipped: 70

#	Responses	Date
1	Include information on securing funding and financing. Include the case studies. Include links to informational resources. Could be online with links.	6/14/2017 9:22 PM
2	The case studies can provide concrete examples of best practices for communities in our specific region. Moreover, I could see using the guidebook in an academic setting to educate students about economic resiliency.	6/14/2017 9:53 AM
3	By investing in youth, and small business opportunities, collaborating across the board with interested parties	6/14/2017 7:47 AM
4	Use it to launch workshops around some of the topics/tools in it	6/13/2017 6:31 PM
5	Be specific with regard to opportunities, tools, and funding opportunities.	6/13/2017 6:26 PM
6	If it comes with funding opportunities	6/13/2017 4:14 PM
7	uncertain until I can review it.	6/13/2017 3:26 PM
8	Another way of looking at the long-term.	6/13/2017 1:07 PM
9	Provide honest and frank case studies of what worked and why, and diverse examples of asset-based development	6/12/2017 8:48 AM
10	detailed analysis and best-practice strategies	6/9/2017 4:17 PM
11	It can be used to educate others on the process (and the need for the process).	6/9/2017 10:18 AM
12	Teach all of us a lot I would assume. Perhaps you might do several webinars after the guidebook is distributed.	6/9/2017 12:08 AM
13	Don't know anything about it.	6/8/2017 9:25 PM
14	Provide education and guidance to more people in the community	6/8/2017 5:43 PM
15	We can share the guidebook via our extensive rural network which includes the PA General Assembly	6/8/2017 4:18 PM
16	Looking at case studies of how communities have addressed economic resilience in Appalachia and developing a set of tools based on these communities success.	6/8/2017 4:00 PM
17	We need new ideas, new partnerships, and community cohesiveness. This can help.	6/8/2017 2:16 PM
18	Provide a guide to implement activities that have been proven to effect change.	6/8/2017 1:54 PM
19	It is of great value to me because I am trying to revamp our area and get the community back in the workforce and bring businesses to our town.	6/8/2017 12:49 PM
20	Learn from community members and speak to people on their level.	6/8/2017 11:25 AM
21	Simple, easy to follow instructions with templates for things like community organizing, impact legislation and other strategies that can be applied by non-professionals in the community.	6/8/2017 10:22 AM
22	Alerts to forced networking with other communities	6/8/2017 10:08 AM
23	A resource to build capacity.	6/8/2017 9:55 AM
24	It needs to be written in plain English and should highlight community solutions to problems that were created in the Appalachian region. It should include, in plain English, a historical context for how the Appalachian region got where it is today (history of extractive industry, etc.) as well as profiles of community leaders who have made a difference. It should also include a list of potential funding and technical assistance resources that are specific about what kind of help they can provide.	6/8/2017 9:26 AM
25	Although, it may be unpopular, I do not believe that ALL communities can be "saved" nor should they! We need to continue the work in SWVA to make our region, especially Lenowisco, a technology corridor. We need to work with our colleges, through state funding, to provide training and degrees that translate into jobs and employment opportunities! It does Wise County no good to educate Fairfax County's kids only to ship them back out after 4 years!! Don't get me wrong, we will take all they'll send us, we need to start keeping some of them too!	6/7/2017 10:31 PM

Strengthening Economic Resilience in Appalachia

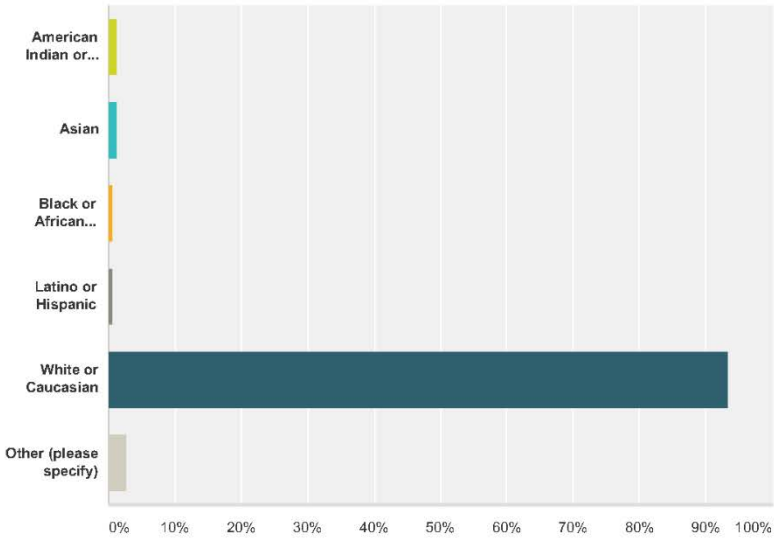
26	Board member	6/7/2017 8:13 PM
27	Concise. Be realistic - no pie in the sky "economic resilience for dummies" guide. Emphasize the importance of identifying and leveraging unique assets and (relatively) political-proof strategies.	6/7/2017 8:05 PM
28	I'm not sure.	6/7/2017 8:05 PM
29	Be sure it is available to UVA@Wise (college) which is taking a lead in our community to create new jobs and opportunities	6/7/2017 8:02 PM
30	N/A	6/7/2017 7:53 PM
31	Fined startup grants that produce opportunities in areas the community would benefit from.	6/7/2017 7:24 PM
32	Not sure till I see it.	6/7/2017 2:58 PM
33	Plan interactive workshops and/or webinars for dissemination.	6/7/2017 2:03 PM
34	Wide distribution via community meetings	6/7/2017 1:12 PM
35	I would like to start a business here	6/7/2017 12:39 PM
36	By communicating the opportunities and plans very broadly	6/7/2017 10:57 AM
37	Through the creation of a sort of "how to" manual to provide a clear pathway for community improvement.	6/7/2017 9:48 AM
38	Not sure.	6/7/2017 9:46 AM
39	It should be create by residents	6/7/2017 9:44 AM
40	It could help guide us toward funding sources that are desperately needed in our region that could allow for organizations like mine to secure enough funding on a multi-year basis so hat we could be more effective in the communities that we are serving instead of having to operate on multiple grants to cover our work over time that are on time frames that do not coincide with typical project and community development or environmental restoration projects.	6/6/2017 6:57 PM
41	Get it out to citizens, business and community leaders	6/6/2017 12:17 PM
42	The progressives in Wise County are not well-connected, and tend to be a tad petty. Perhaps this guidebook will help.	6/5/2017 6:12 PM
43	Help leaders and residents see what has worked elsewhere. Highlight a path forward. Make clear the possibilities and potential and help create a sense of hope and opportunity. Provide advice on changing community attitudes from resigned negativism to inspired optimism.	6/5/2017 2:59 PM
44	Could potentially be a guide to assist our community with going down the right path for success in the future, away from, but in cooperation with, the coal industry.	6/5/2017 2:53 PM
45	Concrete examples of things that have worked in other communities to inform and inspire communities; technical recommendations for CDFIs, elected officials, etc.; models and best practices for community practitioners to bring together coalitions and different regional actors.	6/5/2017 1:50 PM
46	Wise person can change their mind a fool never does. Hoping it changes minds.	6/5/2017 1:45 PM
47	It can help provide resources for local economic development boards and guide our work.	6/5/2017 8:15 AM
48	provide checklists for strengthening local economies lists of resources including coaches, consultants map for building community	6/3/2017 4:56 PM
49	Unsure.	6/1/2017 5:44 PM
50	Could possible help communities see good examples to help them move forward, however if the information does not motivate political leaders on the local and state level, then there will be few resources to implement projects. If we are only preaching to the choir then the value is limited. There are many existing efforts including webinars, conferences, etc available and this information must be truly unique and not duplicate what is already out there.	5/31/2017 3:33 PM
51	Simple, easy to follow advice on how to make the most impact and how to get the people/money to do it.	5/31/2017 3:22 PM
52	Guide to help us further progress in turning our town around. More	5/31/2017 12:28 PM
53	Make sure it actually reaches our people. It should read in a way they understand.	5/31/2017 9:51 AM
54	New Ideas	5/31/2017 9:27 AM
55	Guidance on funding and best practices for capacity building.	5/31/2017 6:36 AM
56	this remains to be seen	5/30/2017 3:46 PM

Strengthening Economic Resilience in Appalachia

57	waiting to see	5/30/2017 3:37 PM
58	Break ties with corporatism and discredited social institutions. Choose leaders from among those most affected.	5/30/2017 2:47 PM
59	Best practices and case studies	5/30/2017 10:29 AM
60	Keep it simple, straight-forward and free of academic jargon and "corporate speak" that says nothing.	5/28/2017 11:04 PM
61	unknown	5/28/2017 5:44 PM
62	If it would give folks practical skills in how to come to a community wide understanding of the ways to move forward, leaving no one behind.	5/28/2017 11:34 AM
63	Most people need something to look at, to read to understand things. Having a guidebook will help those who not only have an idea but no plan, but will also make those who are interested understand the process.	5/28/2017 9:02 AM
64	Appalachia and rural areas have so much potential that is just waiting to be uncovered and any resource that can assist me in helping others see this is very valuable.	5/27/2017 7:15 PM
65	Best practices are always so helpful. Listing of resources never works. A REALLY good example that I've been using lately is The Maker City Book.	5/26/2017 5:44 PM
66	massive distribution in multiple media	5/26/2017 4:03 PM
67	Technical advice for starting and sustaining worker owned cooperatives	5/26/2017 1:56 PM
68	If it is available in an easy to read, easy to use, handbook that can be easily shared among groups. Additionally, if there is a long version and a short version that can be printed. It is often hard to print these large documents with limited resources to share! If there are created powerpoints about the guide that could be used for presentations in the community that would be great.	5/26/2017 1:53 PM
69	Show success stories from other communities, give concrete instructions on how to create/replicate our own successes, connect communities to the resources (partners/training/funding/technical assistance) to make it happen.	5/26/2017 1:45 PM
70	Offer a variety of solutions for a variety of situations. My community's needs may be very different from the needs of a community in PA and offering only one blanket solution neglects to take into account or unique culture, background and assets.	5/26/2017 12:10 PM
71	to emphasize the need for community voices in decision making processes, showing the value of shared knowledge and diverse perspectives in development practices. There's never just one answer or one industry or one voice; acknowledging and considering a broad range of resources and assets will help us value and therefore implement more sustainable practices. More specifically, in my work, we are creating a toolkit for clean up and development of abandoned mine lands. This guidebook seems like it could be a complimentary resource for best practices and decision making around development projects and community engagement.	5/26/2017 11:19 AM
72	road map for engaging with players who can change regulations that impede small farms and small food producers; also focus on SUSTAINABILITY, both eco and for human individuals and communities	5/26/2017 9:05 AM
73	as a guide book	5/25/2017 9:41 PM
74	If it offers real explanations about how economic resiliency has been increased in Appalachia or similar places, and advises us to follow these paths. A guidebook that's more of a loose collection of tools, where people can just grab whatever tool they're already good at, would be less helpful. We need value judgments about what works, not just how-to technical assistance.	5/25/2017 9:37 PM
75	as part of a grassroots effort	5/25/2017 8:35 PM
76	Write it in a readable format. Sometimes jargon breaks down the ability for people to be involved.	5/25/2017 6:08 PM
77	For new ideas	5/25/2017 6:02 PM
78	Given that Appalachia covers such a large swatch of the United States, it will be helpful if the guidebook is written with local political, social, economic, and environmental context in mind. Provide case studies from different sub-regions of Appalachia. Provide details regarding not only what factors contribute to economic resilience, but examples of how communities have strengthened them.	5/25/2017 4:10 PM
79	Providing ideas about how to move forward with local leadership.	5/25/2017 2:26 PM
80	Depends on your definition of "community." My immediate area is more 'residential/rural/small farming'. My larger community needs to escape the reliance on coal-based jobs and diversify. We need to re-educate our citizens to appreciate the benefits of a good education.	5/25/2017 11:38 AM
81	As resource for active citizens and elected leaders	5/25/2017 11:24 AM

Q12 Would you describe yourself as:

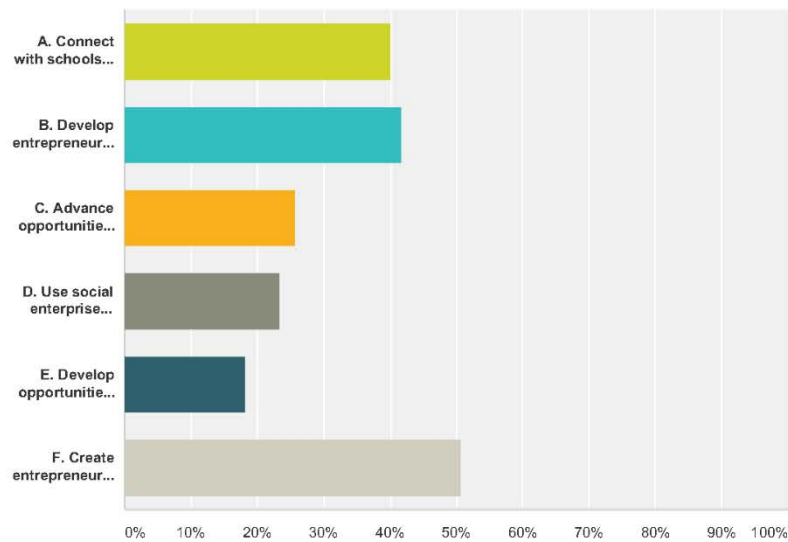
Answered: 148 Skipped: 3



Answer Choices	Responses	
American Indian or Native American	1.35%	2
Asian	1.35%	2
Black or African American	0.68%	1
Latino or Hispanic	0.68%	1
White or Caucasian	93.24%	138
Other (please specify)	2.70%	4
Total		148

Q13 OPTIONAL questions below around strategies to build economic resilience:
For best practice #1, Cultivate entrepreneurs and develop resources for business start-ups, which of the following related strategies are the most important (select up to two)?

Answered: 132 Skipped: 19

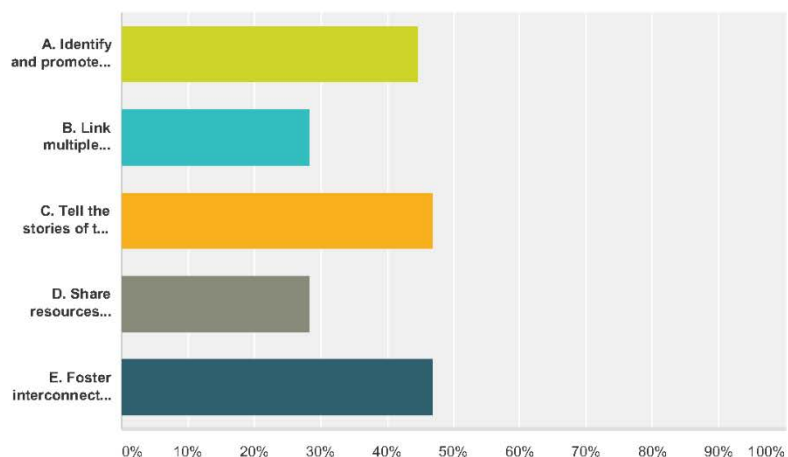


Answer Choices	Responses
A. Connect with schools, colleges and universities for training, mentoring, and research opportunities.	40.15% 53
B. Develop entrepreneur resources, business plan competitions, and opportunities to grow local businesses and access capital.	41.67% 55
C. Advance opportunities for workforce training in specific sectors and industries including for regional context and displaced workers.	25.76% 34
D. Use social enterprise resources and tools to develop community-based businesses.	23.48% 31
E. Develop opportunities for remote work and telecommuting.	18.18% 24
F. Create entrepreneurial ecosystems with locally-centered markets.	50.76% 67
Total Respondents: 132	

Strengthening Economic Resilience in Appalachia

Q14 For best practice #2, Identify and grow the assets in the community and region, which of the following related strategies are the most important (select up to two)?

Answered: 130 Skipped: 21

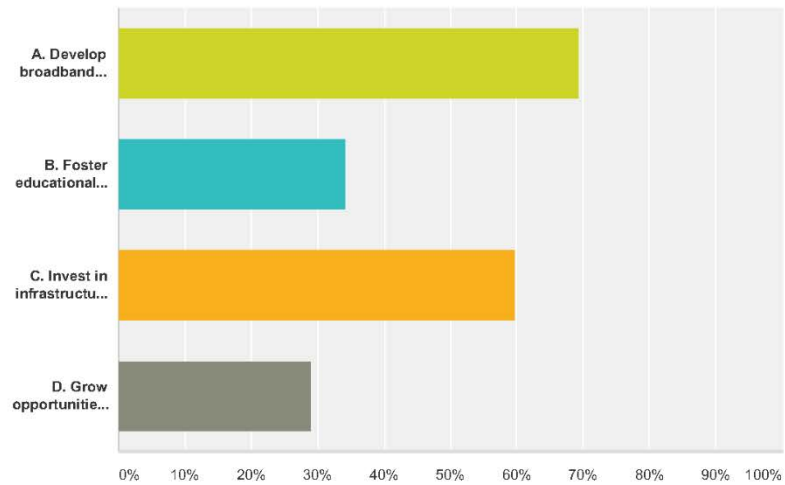


Answer Choices	Responses
A. Identify and promote assets within the region and community through partnerships.	44.62% 58
B. Link multiple destinations and activities to create more local business opportunities and encourage longer visits.	28.46% 37
C. Tell the stories of the community, especially positive stories, to change the narrative. o Create intergenerational learning exchanges between elders and youth as well as learning opportunities between towns and practitioners.	46.92% 61
D. Share resources across the region such as marketing resources or research into regional trends.	28.46% 37
E. Foster interconnection between rural and urban areas, in broader regions around resources, as well as food, recreation, and energy supply connections.	46.92% 61
Total Respondents: 130	

Strengthening Economic Resilience in Appalachia

Q15 For best practice #3, Invest in education, technology, infrastructure and broadband, which of the following related strategies are the most important (select up to two)?

Answered: 134 Skipped: 17

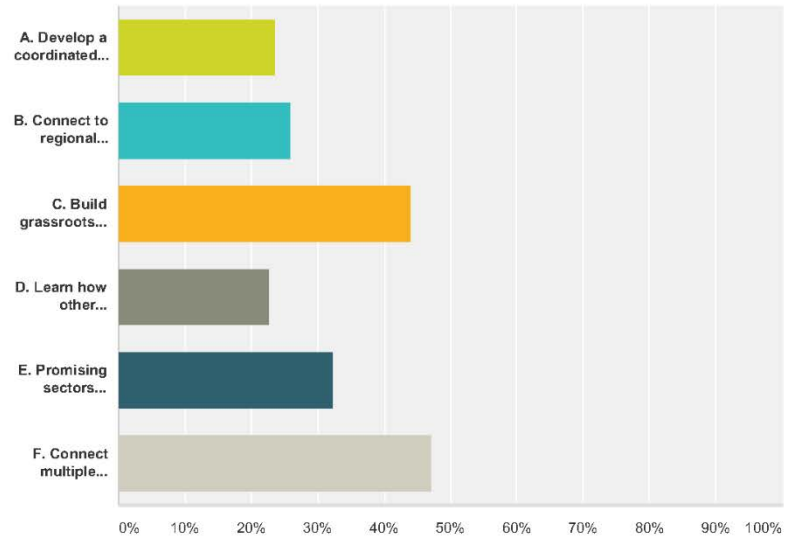


Answer Choices	Responses
A. Develop broadband accessibility throughout Appalachia.	69.40% 93
B. Foster educational opportunities from preschool – post-secondary for a wide range of community members.	34.33% 46
C. Invest in infrastructure including public water, public sewer, energy accessibility, and transportation (including multi-modal transportation). o Many businesses have a renewable energy requirement to locate in an area	59.70% 80
D. Grow opportunities around technology in multiple sectors.	29.10% 39
Total Respondents: 134	

Strengthening Economic Resilience in Appalachia

Q16 For best practice #4, Move multiple sectors forward for economic development and grow value chains, which of the following related strategies are the most important (select up to two)?

Answered: 127 Skipped: 24

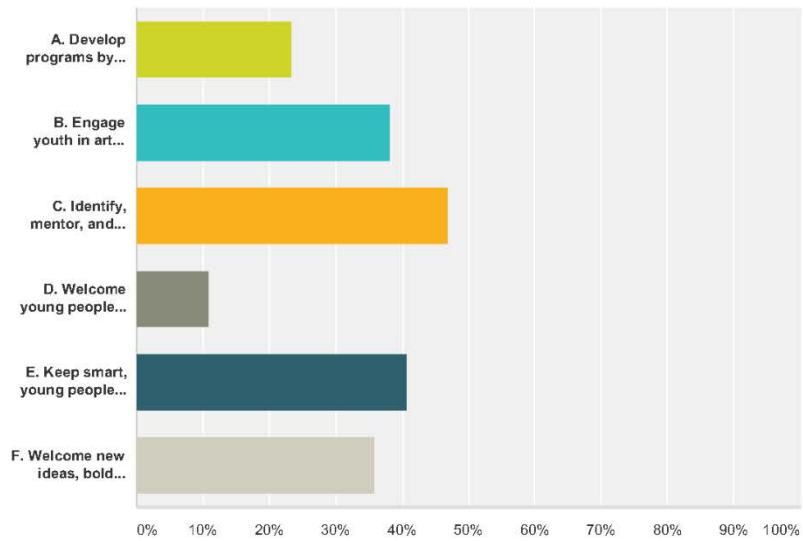


Answer Choices	Responses
A. Develop a coordinated strategy for economic growth.	23.62% 30
B. Connect to regional markets for sales of products and services. <input type="checkbox"/> Grow and connect with the broader region's economy and to market opportunities in regional urban centers.	25.98% 33
C. Build grassroots support for economic diversification, and collaborate with public and private sectors.	44.09% 56
D. Learn how other communities and regions built economic growth and share ideas.	22.83% 29
E. Promising sectors include: <input type="checkbox"/> Advanced manufacturing, health care, renewable energy, outdoor recreation, local food systems and agriculture, technology and others	32.28% 41
F. Connect multiple opportunities to grow a value chain around what is being created locally. <input type="checkbox"/> Use a systems approach to develop value chains; look across a region to determine what levers can grow economic resilience. <input type="checkbox"/> Develop a broader recognition of the interdependence between urban and rural areas. Create a deeper recognition of the value of rural.	47.24% 60
Total Respondents: 127	

Strengthening Economic Resilience in Appalachia

Q17 For best practice #5, Grow youth engagement and next generation leadership, which of the following related strategies are the most important (select up to two)?

Answered: 128 Skipped: 23

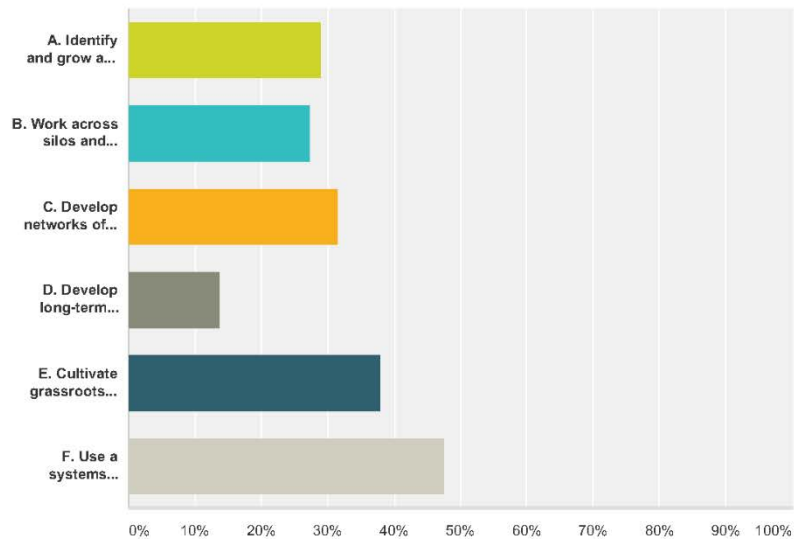


Answer Choices	Responses
A. Develop programs by youth, for youth.	23.44% 30
B. Engage youth in arts, culture and community-building opportunities.	38.28% 49
C. Identify, mentor, and grow young leaders for the next generation. o Develop mentoring, learning opportunities, idea exchanges and programs to grow skills and to learn about entrepreneurship (like Appalachian Fellowship Program and across generations) o Connect to schools and work with teachers, students, parents in multiple ways.	46.88% 60
D. Welcome young people in communities – ensure that youth feel welcome.	10.94% 14
E. Keep smart, young people in communities, and bring smart, young people from outside of communities in.	40.63% 52
F. Welcome new ideas, bold visions, and unlikely partnerships.	35.94% 46
Total Respondents: 128	

Strengthening Economic Resilience in Appalachia

Q18 For best practice #6, Build networks and foster collaboration, which of the following related strategies are the most important (select up to two)?

Answered: 124 Skipped: 27

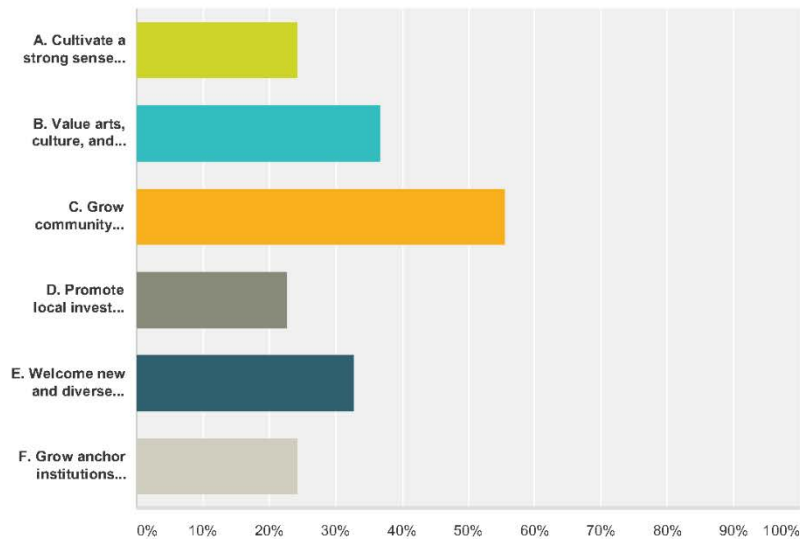


Answer Choices	Responses
A. Identify and grow a dedicated entity or anchor organization(s) to: o Build capacity, move ideas forward, provide a consistent forum for collaboration, develop multiple funding streams, and help implement ideas.	29.03% 36
B. Work across silos and sectors; encourage entrepreneurial spirit and mindsets.	27.42% 34
C. Develop networks of communities working together and sub-regional networks.	31.45% 39
D. Develop long-term staffing capacity to move ideas forward.	13.71% 17
E. Cultivate grassroots efforts and community leadership, and effective communication using different tools.	37.90% 47
F. Use a systems approach to develop a shared understanding community opportunities and needs, to grow sectors, develop assets, and foster regional collaboration with long-term vision and effort. o Engage economists at the regional scale to share knowledge and best practices.	47.58% 59
Total Respondents: 124	

Strengthening Economic Resilience in Appalachia

Q19 For best practice #7, Create communities where people want to live, which of the following related strategies are the most important (select up to two)?

Answered: 128 Skipped: 23

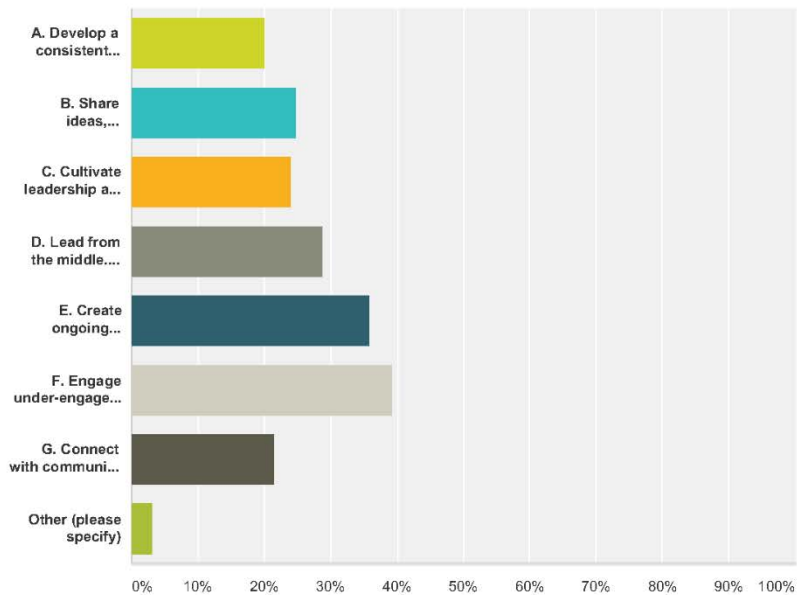


Answer Choices	Responses
A. Cultivate a strong sense of place and pride in place through storytelling, arts, and cultural heritage opportunities.	24.22% 31
B. Value arts, culture, and heritage and use them as building blocks for a new economy in Appalachia. Tell stories, share stories, including new, positive stories.	36.72% 47
C. Grow community health and wellness. o Create programs and opportunities specifically for childcare, elder care, women, single-parent households, and vulnerable community members to ensure that basic needs are met. o Create high quality communities with amenities for all community members.	55.47% 71
D. Promote local investing via community foundations and seed funding for local ideas.	22.66% 29
E. Welcome new and diverse people into communities. Encourage new residents, including telecommuters, young families, and immigrants.	32.81% 42
F. Grow anchor institutions and businesses that grow communities (i.e. a college, university, hospital, elder/youth co-care opportunities).	24.22% 31
Total Respondents: 128	

Strengthening Economic Resilience in Appalachia

Q20 For best practice #8, Engage the community over the long-term, which of the following related strategies are the most important (select up to two)?

Answered: 125 Skipped: 26

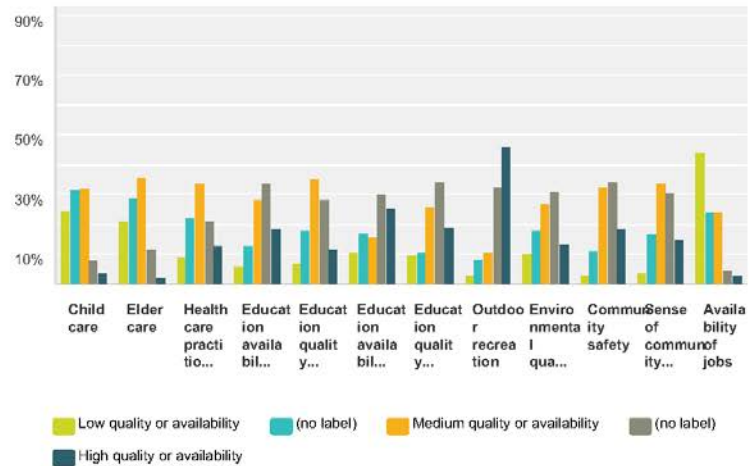


Answer Choices	Responses
A. Develop a consistent forum for community engagement around a specific focus with a long-term facilitator or convener.	20.00% 25
B. Share ideas, challenges and successes with consistent communication with the broader community.	24.80% 31
C. Cultivate leadership and trust for long-term efforts and success.	24.00% 30
D. Lead from the middle. Create the space where leadership can come forward and flourish to create change together.	28.80% 36
E. Create ongoing engaging, safe spaces for the community to gather across sectors and for all community members to feel valued, welcomed, & heard.	36.00% 45
F. Engage under-engaged community members (those affected by decisions need to be part of the solution).	39.20% 49
G. Connect with community sparkplugs and bridgemakers in the community to sustain leadership, growth and momentum.	21.60% 27
Other (please specify)	3.20% 4

Strengthening Economic Resilience in Appalachia

Q21 How would you rate the following quality of life characteristics in your community on a scale of one to five (one being low quality or availability, five being high quality or availability):

Answered: 134 Skipped: 17



	Low quality or availability	(no label)	Medium quality or availability	(no label)	High quality or availability	Total
Child care	24.62% 32	31.54% 41	32.31% 42	7.69% 10	3.85% 5	130
Elder care	21.37% 28	29.01% 38	35.88% 47	11.45% 15	2.29% 3	131
Health care practitioners	9.23% 12	22.31% 29	33.85% 44	21.54% 28	13.08% 17	130
Education availability (K-12 grade)	6.15% 8	13.08% 17	28.46% 37	33.85% 44	18.46% 24	130
Education quality (K-12 grade)	6.87% 9	18.32% 24	35.11% 46	28.24% 37	11.45% 15	131
Education availability (college+)	10.61% 14	17.42% 23	15.91% 21	30.30% 40	25.76% 34	132
Education quality (college+)	9.92% 13	10.69% 14	25.95% 34	34.35% 45	19.08% 25	131
Outdoor recreation	3.01% 4	8.27% 11	10.53% 14	32.33% 43	45.86% 61	133
Environmental quality	10.45% 14	17.91% 24	26.87% 36	31.34% 42	13.43% 18	134
Community safety	3.01% 4	11.28% 15	32.33% 43	34.59% 46	18.80% 25	133

Strengthening Economic Resilience in Appalachia

Sense of community (neighbors know one another, etc.)	3.76% 5	16.54% 22	33.83% 45	30.83% 41	15.04% 20	133
Availability of jobs	44.36% 59	24.06% 32	24.06% 32	4.51% 6	3.01% 4	133

APPENDIX E: REGRESSION RESULTS WITH QUADRATIC TERMS

Table 15: Regression results with quadratic terms, Models 1 through 6

	Basic	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Demographic/mobility							
Age 25 to 44	0.099**	0.095**	0.1**	0.099**	0.1**	0.1**	0.106**
Age 65 and up	-0.033	-0.039	-0.032	-0.033	-0.033	-0.034	-0.029
Ethnic Diversity	0.086***	0.089***	0.086***	0.087***	0.082***	0.086***	0.084***
Mobility In-Migration	0.119***	0.121***	0.117***	0.118***	0.113***	0.119***	0.114***
Mobility Out-Migration	-0.089***	-0.088***	-0.089***	-0.089***	-0.09***	-0.09***	-0.088***
Mobility In-Commuting	0.058**	0.064**	0.059**	0.058**	0.061**	0.057**	0.06**
Mobility Out-Commuting	0.014	0.003	0.013	0.013	0.015	0.014	0.016
Residence Born	0.004	0.005	0.003	0.004	0.001	0.003	0.003
Population	0.279***	0.287***	0.281***	0.278***	0.285***	0.282***	0.274***
Land Area	-0.032	-0.034	-0.033	-0.032	-0.034	-0.032	-0.034
College	0.107***	0.104***	0.109***	0.109***	0.111***	0.106***	0.114***
Economic/industry							
Distance to City	0.147***	0.145***	0.146***	0.147***	0.147***	0.147***	0.143***
Business Density	0.036	0.031	0.036	0.035	0.043	0.036	0.044
Self-Employment	0.007	0.158**	0.007	0.007	0.01	0.007	0.01
Self-Employment Squared		-0.145***					
Poverty	-0.111***	-0.112***	-0.111***	-0.111***	-0.118***	-0.11***	-0.104***
Participation	0.085**	0.087**	0.086**	0.085**	0.079*	0.084**	0.089**
Innovation Potential	0.06**	0.062**	0.06**	0.061**	0.06**	0.06**	0.059**
Industry Diversity	0.092*	0.082*	0.093*	0.092*	0.083*	0.091*	0.077
Knowledge Diversity	-0.051**	-0.051**	-0.051**	-0.051**	-0.05**	-0.051**	-0.053**
Farming	0.059	0.054	0.059	0.059	0.061	0.059	0.059
Oil & Gas	0.044	0.043	0.045	0.044	0.044	0.044	0.043
Coal	-0.063***	-0.062***	-0.063***	-0.063***	-0.063***	-0.063***	-0.063***
Manufacturing	-0.03	-0.029	-0.03	-0.03	-0.03	-0.029	-0.031
Community/health							
Primary and Secondary	-0.007	-0.006	-0.007	-0.007	-0.007	-0.007	-0.006
Community College	-0.026*	-0.025*	-0.026*	-0.026*	-0.027*	-0.026*	-0.024
Broadband	-0.035	-0.035	0.001	-0.035	-0.037	-0.035	-0.04
Broadband Squared			-0.040				
Child/Elder Care	0.004	0.004	0.003	0.021	0.003	0.004	0.003
Child/Elder Care Squared				-0.018			
Health Practitioner	-0.095***	-0.094***	-0.095***	-0.095***	-0.097***	-0.096***	-0.097***
Recreational Opportunity	-0.022	-0.021	-0.022	-0.022	-0.023	-0.022	0.082
Recreational Opportunity Squared					-0.474*		
Natural Amenity	0.006	0.004	0.006	0.006	0.005	0.006	0.008
Social Capital	0.004	0.006	0.004	0.004	0.003	0.024	-0.003
Social Capital Squared						-0.016	
Federal Funds	-0.008	-0.008	-0.007	-0.008	0.46*	-0.008	-0.014
Federal Funds Squared							-0.104**
Voting Competitiveness	-0.007	-0.007	-0.006	-0.006	-0.004	-0.007	-0.006
Agritourism	0.016	0.016	0.016	0.016	0.015	0.016	0.016
Direct Farm Sales	0.027*	0.027*	0.028*	0.027*	0.026	0.028*	0.027*
Constant	***	**	***	***	***	***	***
N	3,049	3,049	3,049	3,049	3,049	3,049	3,049
Adjusted R ²	0.2577	0.2586	0.2574	0.2574	0.2584	0.2574	0.2585

Note: Table shows robust standardized coefficients with state fixed effect. Significance levels: different from zero at *10%, **5%, and ***1% or lower. No linear effects detected for broadband, child/elder care, etc.

APPENDIX F: REGRESSION RESULTS WITH INTERACTION TERMS

Table 16: Regression results with interaction terms, Models 1 through 4

	Basic	Model 1	Model 2	Model 3	Model 4
Demographic/mobility					
Age 25 to 44	0.099**	0.091**	0.097**	0.096**	0.1**
Age 65 and up	-0.033	-0.029	-0.034	-0.031	-0.024
Ethnic Diversity	0.086***	0.084***	0.083***	0.086***	0.091***
Mobility In-Migration	0.119***	0.115***	0.11***	0.115***	0.118***
Mobility Out-Migration	-0.089***	-0.089***	-0.089***	-0.09***	-0.09***
Mobility In-Commuting	0.058**	0.057**	0.052*	0.058**	0.055*
Mobility Out-Commuting	0.014	0.015	0.016	0.014	0.012
Residence Born	0.004	0.004	0.001	0.008	0.006
Population	0.279***	0.253***	0.278***	0.24***	0.231***
Land Area	-0.032	-0.033	-0.032	-0.032	-0.025
College	0.107***	0.118***	0.113***	0.124***	0.127***
Economic/industry					
Distance to City	0.147***	0.146***	0.145***	0.141***	0.107**
Business Density	0.036	0.017	0.025	0.019	0.017
Self-Employment	0.007	0.002	0.006	0.001	0.004
Poverty	-0.111***	-0.109***	-0.107***	-0.115***	-0.107***
Participation	0.085**	0.097**	0.09**	0.085**	0.09**
Innovation Potential	0.06**	0.062**	0.063**	0.059**	0.06**
Industry Diversity	0.092*	0.106**	0.096**	0.104**	0.097**
Knowledge Diversity	-0.051**	-0.052**	-0.061***	-0.047**	-0.052**
Farming	0.059	0.05	0.062	0.047	0.04
Oil & Gas	0.044	0.045	0.049	0.044	0.046
Coal	-0.063***	-0.062***	-0.061***	-0.064***	-0.059***
Manufacturing	-0.03	-0.028	-0.028	-0.029	-0.027
Community/health					
Primary and Secondary	-0.007	-0.002	-0.007	-0.002	-0.001
Community College	-0.026*	-0.024	-0.026*	-0.024*	-0.022
Broadband	-0.035	-0.039	-0.036	-0.037	-0.034
Child/Elder Care	0.004	0.005	0.004	0.006	0.005
Health Practitioner	-0.095***	-0.09***	-0.089***	-0.089***	-0.085***
Recreational Opportunity	-0.022	-0.02	-0.022	-0.021	-0.023
Natural Amenity	0.006	0.011	0.011	0.006	0.008
Social Capital	0.004	0.27**	0.088*	0.274*	-0.098**
Federal Funds	-0.008	-0.011	-0.01	-0.011	-0.01
Voting Competitiveness	-0.007	-0.008	-0.007	-0.007	-0.005
Agritourism	0.016	0.017	0.015	0.016	0.014
Direct Farm Sales	0.027*	0.027*	0.028*	0.027*	0.027*
social capital x %age_25-44		-0.271**			
social capital x %mobility_in-com			-0.087**		
social capital x population				-0.283*	
social capital x distance_0.25M					0.139***
Constant	***	***	***	***	***
N	3,049	3,049	3,049	3,049	3,049
Adjusted R ²	0.2577	0.2591	0.2589	0.2586	0.2613

Note: Table shows robust standardized coefficients with state fixed effect. Significance levels: different from zero at *10%, **5%, and ***1% or lower.

Table 17: Regression results with interaction terms, Models 5 through 10

	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Demographic/mobility						
Age 25 to 44	0.094**	0.097**	0.099**	0.099**	0.103**	0.1**
Age 65 and up	-0.037	-0.035	-0.035	-0.033	-0.042	-0.032
Ethnic Diversity	0.092***	0.087***	0.084***	0.083***	0.091***	0.085***
Mobility In-Migration	0.272***	0.117***	0.115***	0.116***	0.117***	0.116***
Mobility Out-Migration	-0.109***	-0.089***	-0.083***	-0.085***	-0.085***	-0.083***
Mobility In-Commuting	0.065**	0.061**	0.062**	0.062**	0.055*	0.066**
Mobility Out-Commuting	0.01	0.104**	0.003	0.012	0.018	-0.002
Residence Born	0.002	0.006	0.002	0.002	0.005	0.005
Population	0.259***	0.286***	0.16*	0.281***	0.285***	0.29***
Land Area	-0.032	-0.034	-0.033	-0.033	-0.034	-0.034
College	0.102***	0.106***	0.11***	0.109***	0.106***	0.107***
Economic/industry						
Distance to City	0.146***	0.148***	0.145***	0.283***	0.149***	0.148***
Business Density	0.037	0.021	0.033	0.045	0.047	0.024
Self-Employment	0.191***	0.087**	-0.291**	0.055*	0.289*	0.066*
Poverty	-0.111***	-0.111***	-0.105***	-0.109***	-0.116***	-0.11***
Participation	0.09**	0.092**	0.086**	0.081**	0.17***	0.089**
Innovation Potential	0.067**	0.061**	0.067**	0.064**	0.056**	0.062**
Industry Diversity	0.107**	0.087*	0.099**	0.099**	0.086*	0.088*
Knowledge Diversity	-0.055**	-0.052**	-0.048**	-0.049**	-0.05**	-0.046**
Farming	0.048	0.058	0.073*	0.072*	0.059	0.219**
Oil & Gas	0.044	0.044	0.045	0.045	0.044	0.044
Coal	-0.059***	-0.063***	-0.063***	-0.066***	-0.06***	-0.061***
Manufacturing	-0.029	-0.032	-0.034	-0.03	-0.029	-0.034
Community/health						
Primary and Secondary	-0.005	-0.006	-0.008	-0.01	-0.008	-0.008
Community College	-0.021	-0.024	-0.023	-0.026*	-0.027*	-0.026*
Broadband	-0.035	-0.036	-0.035	-0.034	-0.034	-0.034
Child/Elder Care	0.004	0.004	0.002	0.003	0.004	0.002
Health Practitioner	-0.096***	-0.087***	-0.096***	-0.098***	-0.097***	-0.087***
Recreational Opportunity	-0.02	-0.022	-0.021	-0.021	-0.023	-0.022
Natural Amenity	0.011	0.002	0.009	0.009	0.007	0.006
Social Capital	0.003	0.004	0.008	0.004	0.004	0.006
Federal Funds	-0.006	-0.007	-0.008	-0.006	-0.007	-0.009
Voting Competitiveness	-0.004	-0.008	-0.006	-0.006	-0.007	-0.006
Agritourism	0.02	0.016	0.014	0.015	0.016	0.016
Direct Farm Sales	0.025	0.027*	0.029*	0.027*	0.027*	0.028*
%self-emp x %mobility._in-mig	-0.27***					
%self-emp x %mobility._out-com		-0.147**				
%self-emp x population			0.291**			
%self-emp x distance_0.25M				-0.155*		
%self-emp x %participation					-0.293*	
%self-emp x %industry_Farming						-0.174**
Constant	**	**	***	**	*	**
N	3,049	3,049	3,049	3,049	3,049	3,049
Adjusted R ²	0.2610	0.2584	0.2587	0.2591	0.2584	0.2592

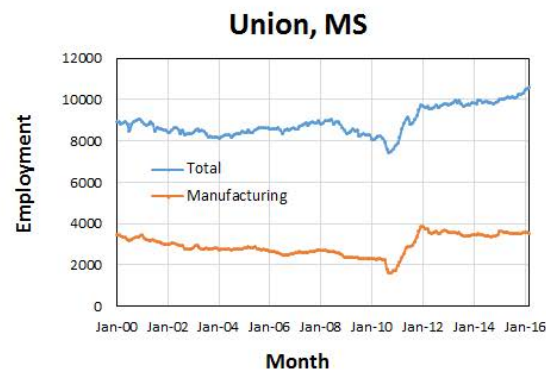
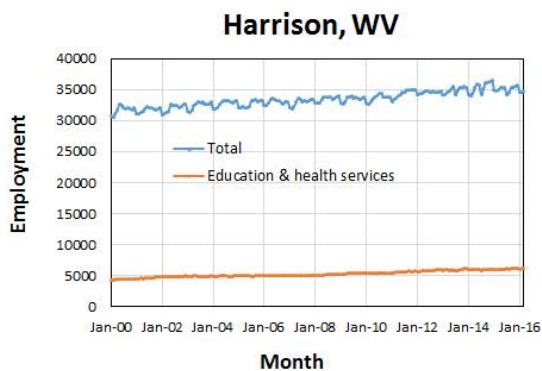
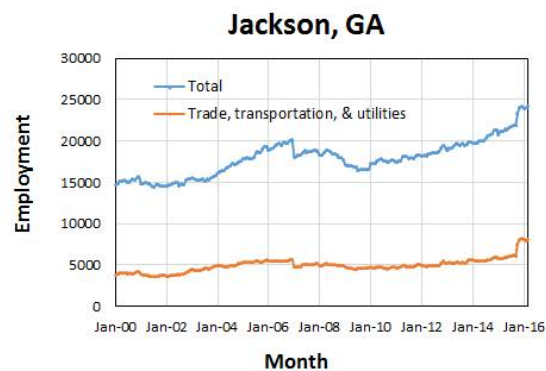
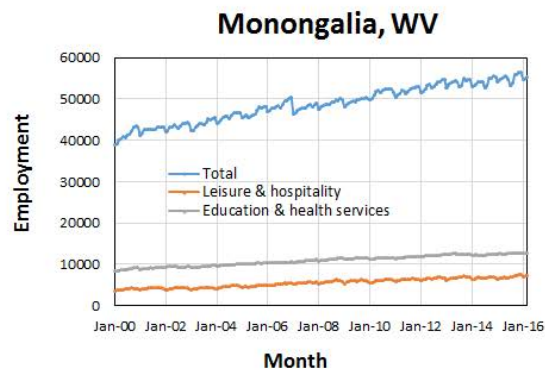
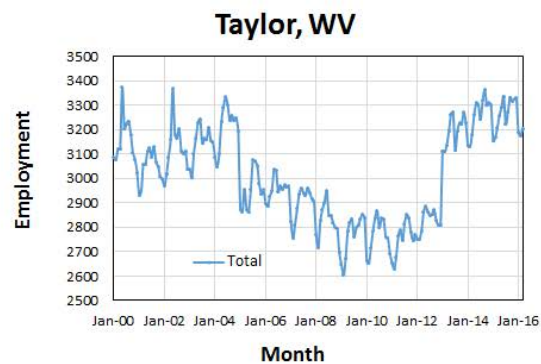
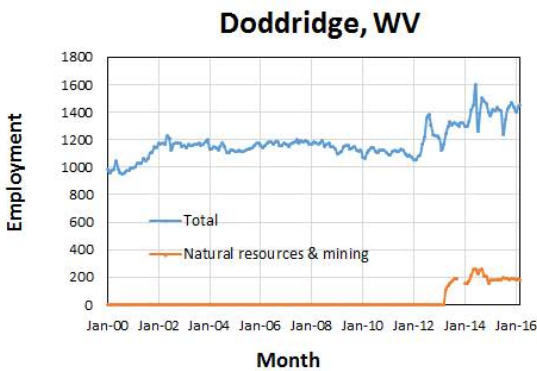
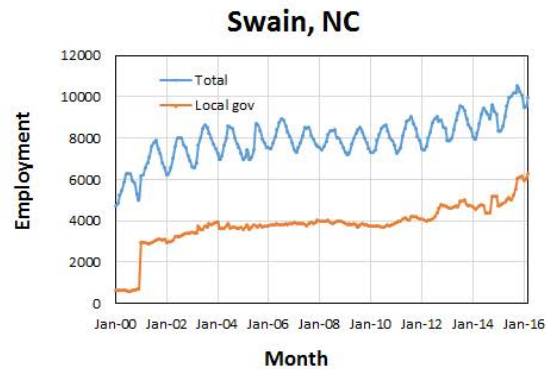
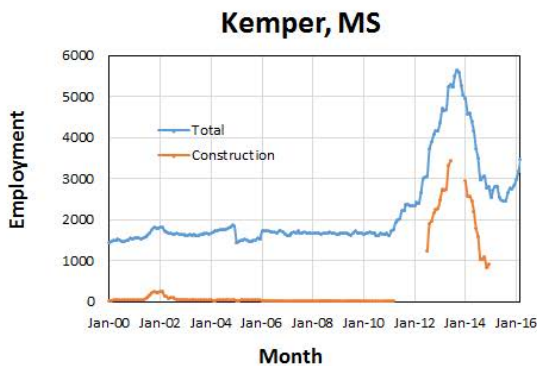
Note: Table shows robust standardized coefficients with state fixed effect. Significance levels: different from zero at *10%, **5%, and ***1% or lower.

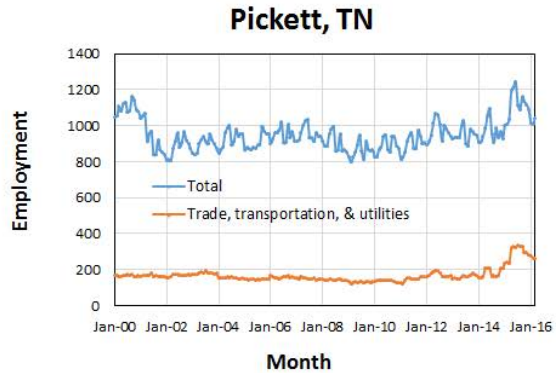
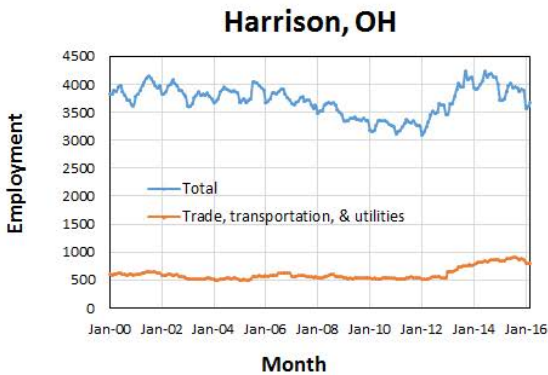
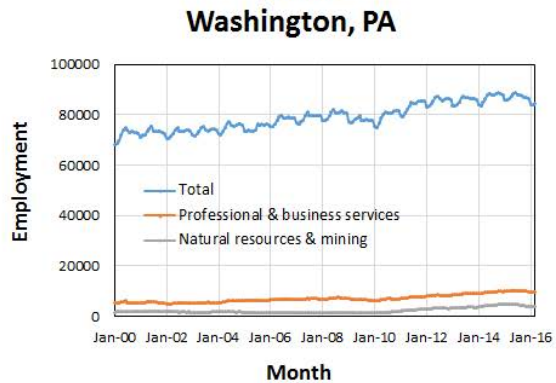
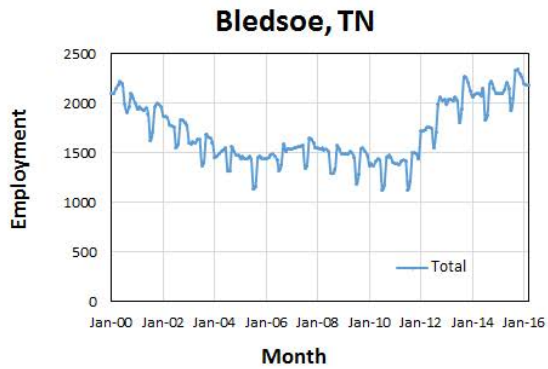
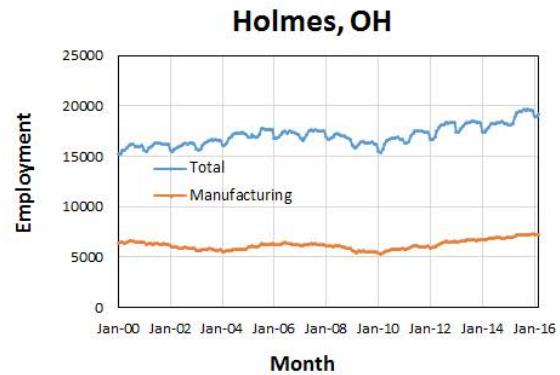
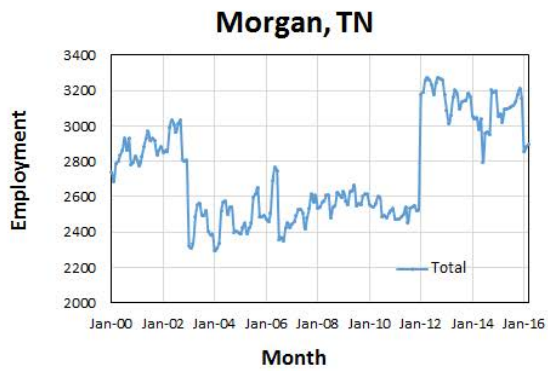
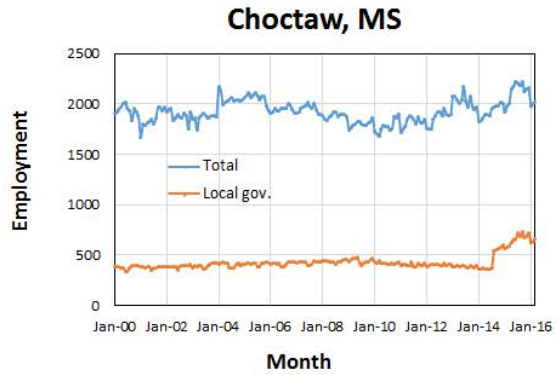
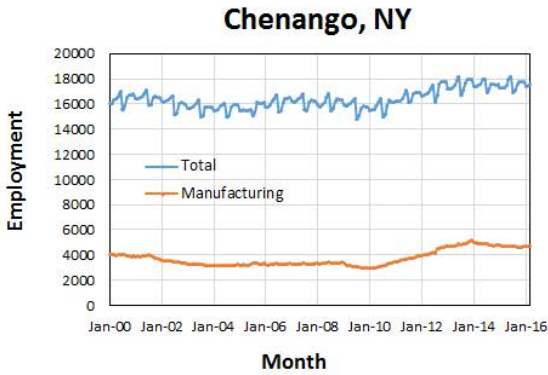
Table 18: Regression results with interaction terms, Models 11 through 14

	Model 11	Model 12	Model 13	Model 14
Demographic/mobility				
Age 25 to 44	0.091**	0.102**	0.108***	0.106***
Age 65 and up	-0.04	-0.032	-0.026	-0.057
Ethnic Diversity	0.082***	0.088***	0.075***	0.081***
Mobility In-Migration	0.111***	0.115***	0.207***	0.109***
Mobility Out-Migration	-0.087***	-0.084***	-0.097***	-0.089***
Mobility In-Commuting	0.453***	0.062**	0.062**	0.059**
Mobility Out-Commuting	0.014	0.006	0.013	0.031
Residence Born	-0.001	0.005	0.006	0.001
Population	0.283***	0.283***	0.268***	0.273***
Land Area	-0.034	-0.035	-0.029	-0.031
College	0.108***	0.113***	0.104***	0.12***
Economic/industry				
Distance to City	0.146***	0.147***	0.153***	0.142***
Business Density	0.036	0.027	0.031	0.175***
Self-Employment	0.008	0.008	0.006	0.016
Poverty	-0.112***	-0.113***	-0.111***	-0.1***
Participation	0.085**	0.087**	0.09**	0.072*
Innovation Potential	0.067**	0.064**	0.063**	0.062**
Industry Diversity	0.082*	0.177***	0.1**	0.074
Knowledge Diversity	-0.052**	-0.058***	-0.051**	-0.053**
Farming	0.058	0.063	0.062	0.061
Oil & Gas	0.043	0.042	0.044	0.041
Coal	-0.064***	-0.063***	-0.061***	-0.063***
Manufacturing	-0.028	-0.034	-0.03	-0.023
Community/health				
Primary and Secondary	-0.006	-0.007	-0.006	-0.004
Community College	-0.028*	-0.023	-0.024	-0.024
Broadband	-0.038	-0.038	-0.038	-0.045*
Child/Elder Care	0.001	0.216*	0.003	0.002
Health Practitioner	-0.089***	-0.089***	-0.089***	-0.092***
Recreational Opportunity	-0.022	-0.022	-0.021	0.112**
Natural Amenity	0.014	0.01	0.006	0.011
Social Capital	-0.007	0.007	0.011	-0.006
Federal Funds	0.092**	-0.011	-0.008	-0.018
Voting Competitiveness	-0.004	-0.005	0.166***	-0.009
Agritourism	0.016	0.016	0.014	0.018
Direct Farm Sales	0.026	0.028*	0.03*	0.026
federal fund x %mobility_in-com	-0.415***			
child/elder care x diversity_industry		-0.267*		
%voting_comp. x %mobility_in-mig			-0.207***	
recreational opp. x business density				-0.211***
Constant	**	**	**	***
N	3,049	3,049	3,049	3,049
Adjusted R ²	0.2600	0.2583	0.2607	0.2609

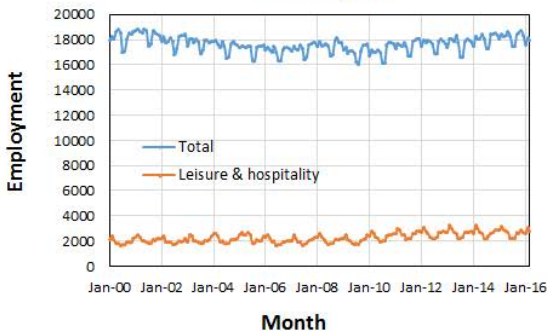
Note: Table shows robust standardized coefficients with state fixed effect. Significance levels: different from zero at *10%, **5%, and ***1% or lower.

APPENDIX G: EMPLOYMENT FOR COUNTIES WITH HIGH RESIDUALS IN THE OLS MODEL

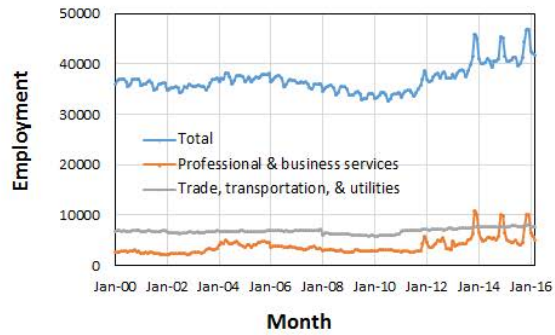




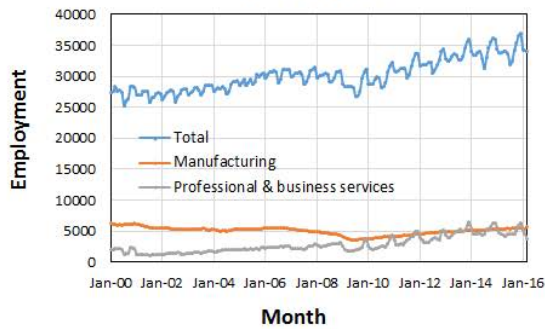
Cortland, NY



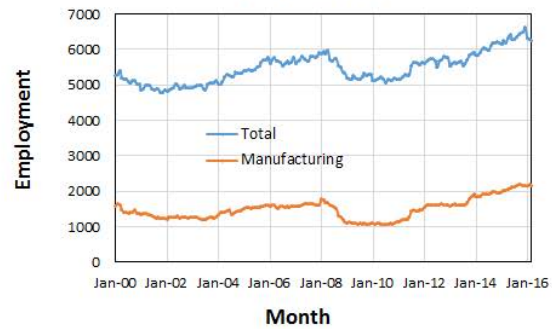
Bradley, TN



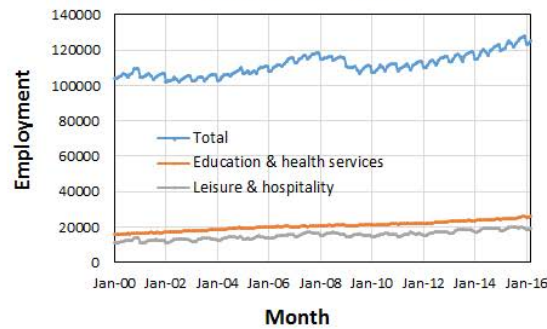
Madison, KY



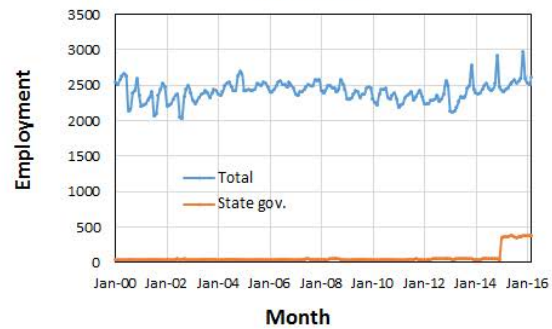
Itawamba, MS



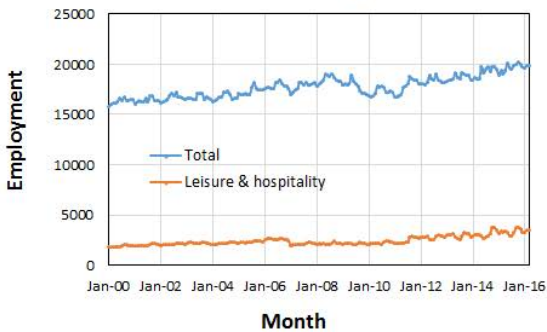
Buncombe, NC



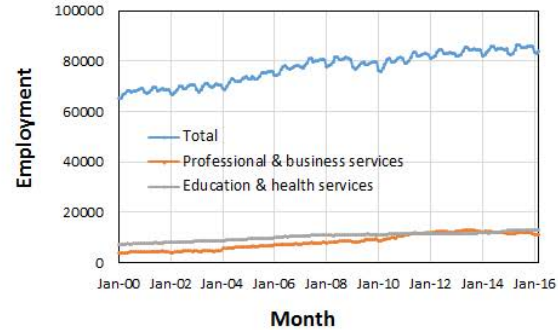
Grayson, VA



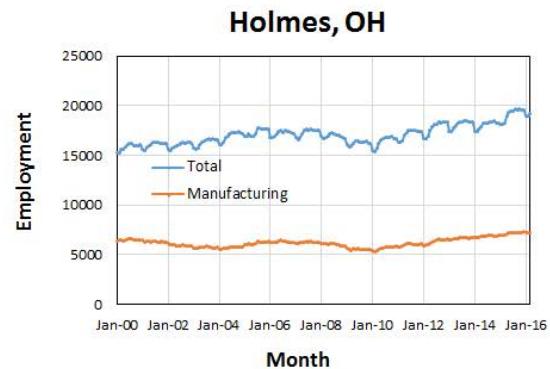
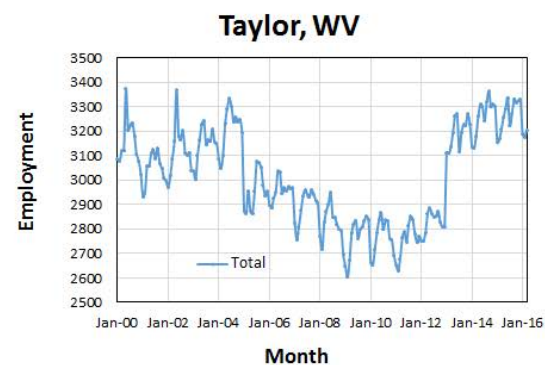
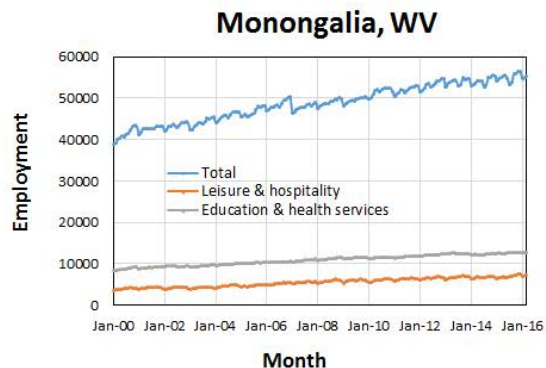
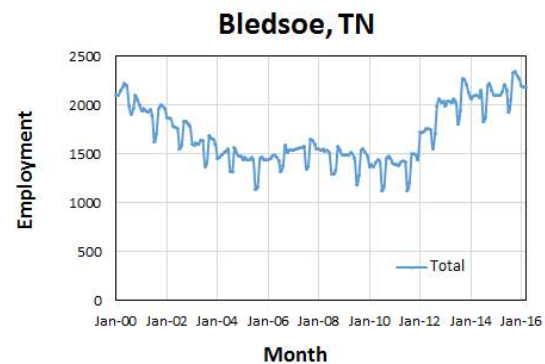
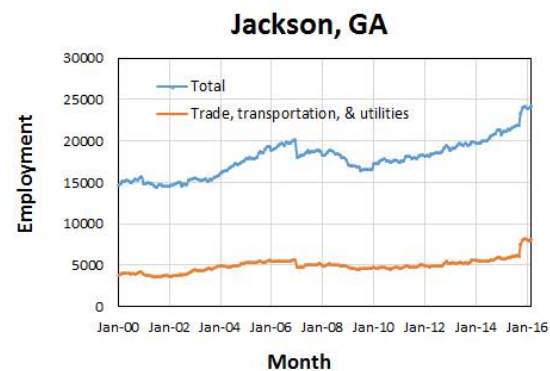
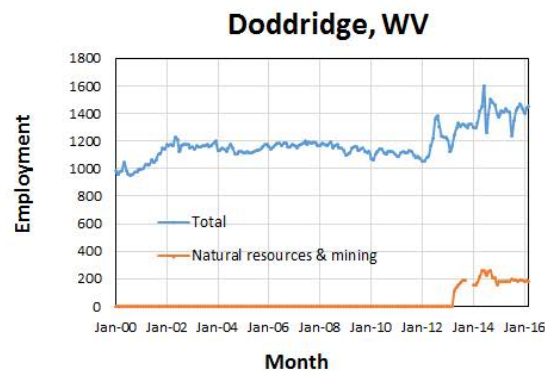
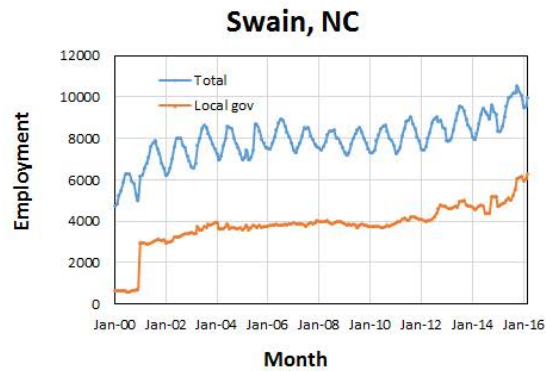
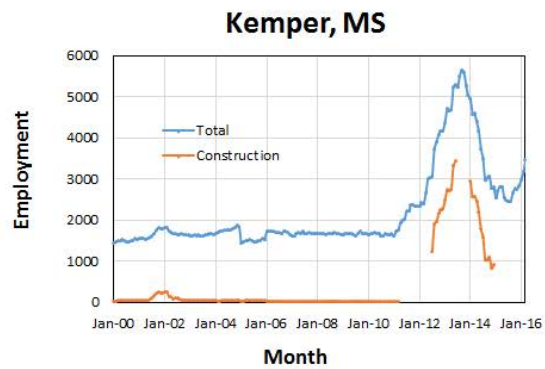
Oktibbeha, MS



Butler, PA



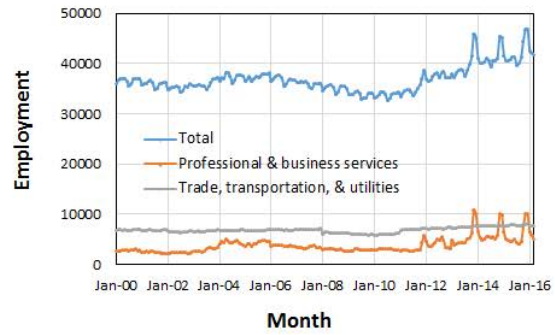
APPENDIX H: EMPLOYMENT FOR TOP COUNTIES BASED ON RESILIENCE IN THE OLS MODEL



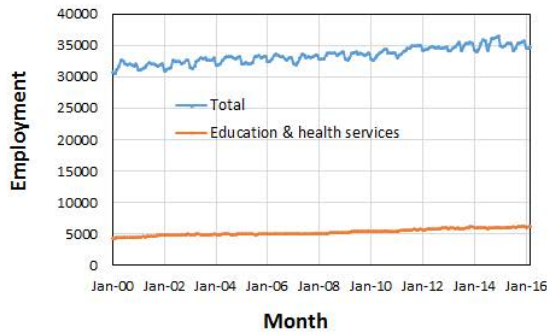
Union, MS



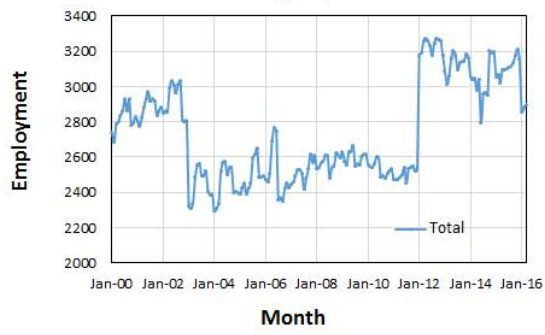
Bradley, TN



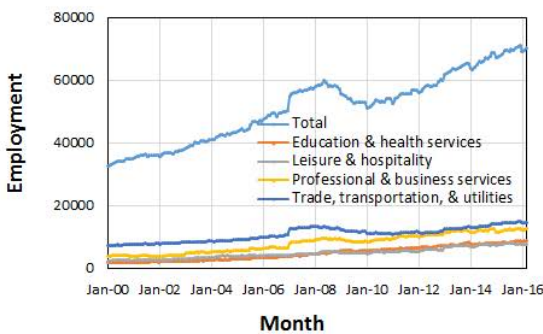
Harrison, WV



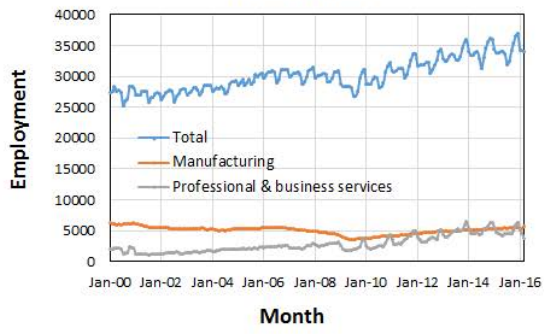
Morgan, TN



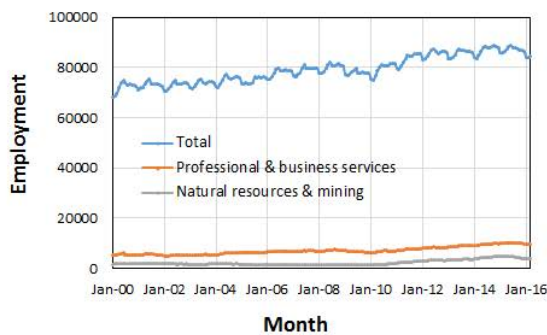
Forsyth, GA



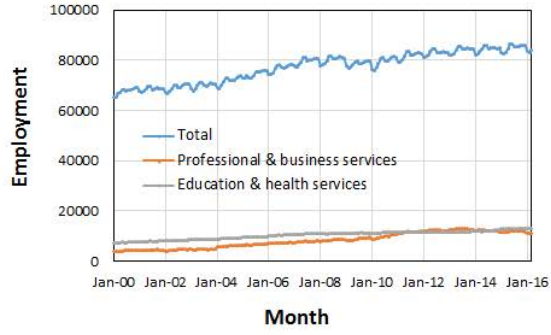
Madison, KY



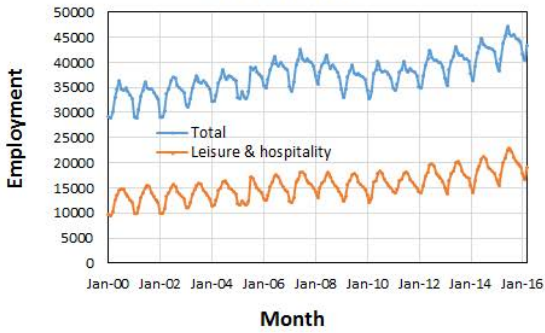
Washington, PA



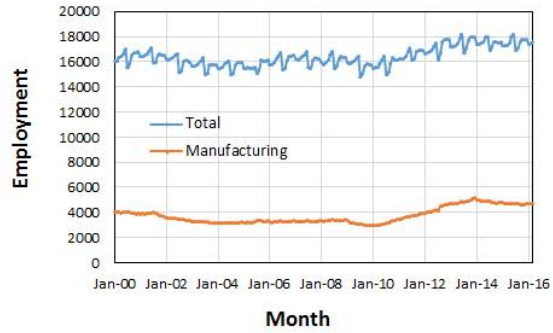
Butler, PA



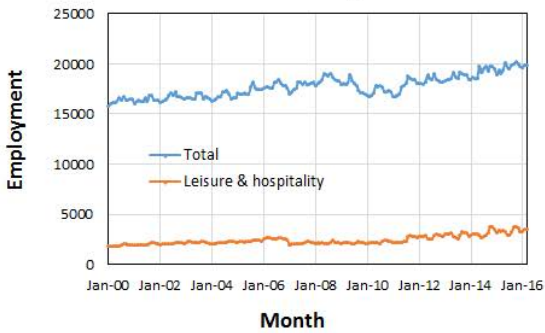
Sevier, TN



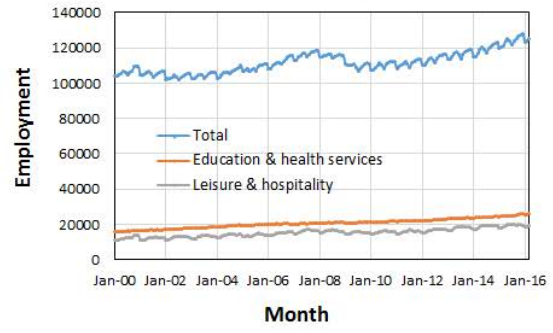
Chenango, NY



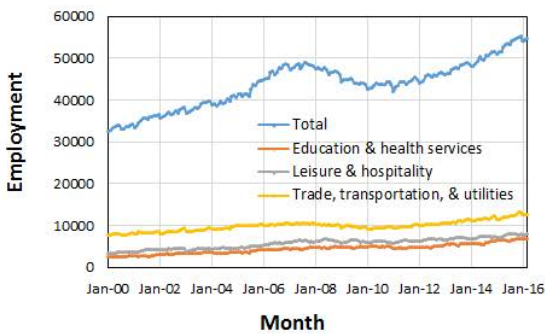
Oktibbeha, MS



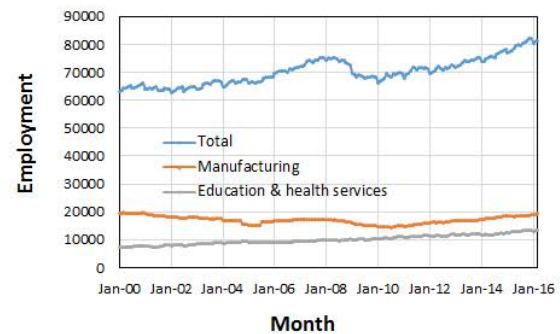
Buncombe, NC



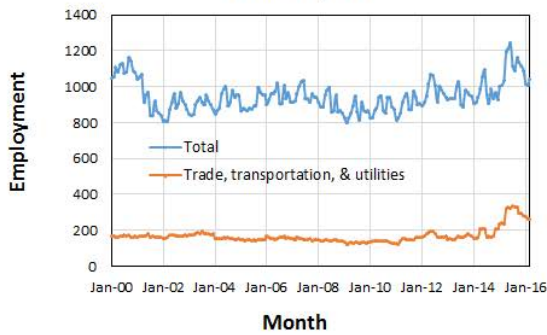
Cherokee, GA



Hall, GA



Pickett, TN



St. Clair, AL



APPENDIX I: TOP COUNTIES BASED ON RESIDUALS IN THE OLS MODEL THAT ARE SELF-EMPLOYMENT DOMINANT

Table 19: Top counties based on residuals and self-employment dominant

County	Population (2015)	Resilience	Residuals	Net growth	Dominant sector in recovery	Sector growth	Percent of job growth accounted for by this sector
Taylor, WV	16,318	0.83	0.25	641	Self-employment	199	31.0%
Choctaw, MS	9,026	0.71	0.20	483	Self-employment	261	54.0%
Buncombe, NC	221,642	0.75	0.12	21,785	Self-employment	7,161	32.9%
Oktibbeha, MS	43,985	0.75	0.11	3749	Self-employment	1036	27.6%
Fannin, GA	22,174	0.68	0.11	1309	Self-employment	445	34.0%
Alcorn, MS	35,688	0.67	0.10	2583	Self-employment	1053	40.8%

Source: USDL (2015).

