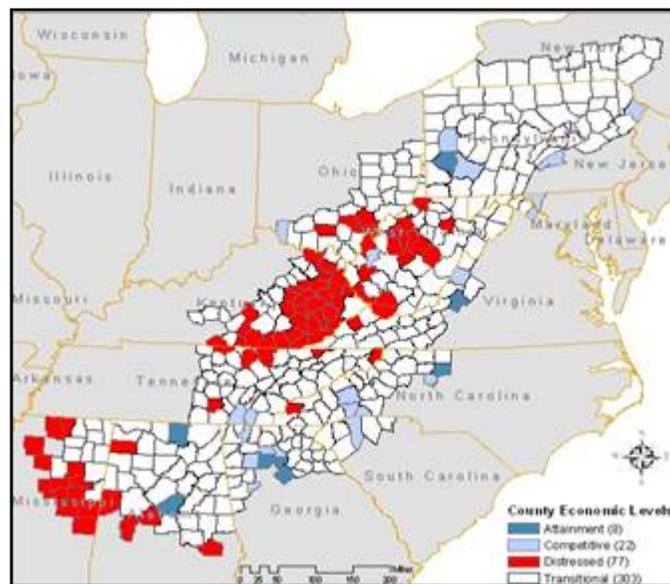


Sources of Regional Growth in Non-Metro Appalachia

Vol. 1. Project Background and Prior Research on Economic Growth Paths



Prepared for the Appalachian Regional Commission

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SOURCES OF GROWTH PROJECT

The *Sources of Growth* project is part of a series of research efforts funded by the Appalachian Regional Commission to improve our understanding of factors affecting economic growth in rural and distressed areas. As stated in the Volume 1 Introduction, “the starting premise of this project is that there can multiple paths that an area can pursue in successfully enhancing job and income creation. They may build on natural resources, cultural resources, human resources, local amenities, institutional facilities or location advantages. The resulting direction of economic growth may involve manufacturing or supply chain development, resource extraction or tourism development, educational development or trade center development.” This research is intended to provide a basis of information that can ultimately be useful for enhancing the effectiveness of policies and tools aimed at improving the region’s economic development.

Results of the Sources of Growth project are presented in a series of documents listed below. This document is Volume 1.

- ***Executive Summary*** –synthesis of findings from all work products related to the study’s four main research components.

- ***Volume 1, Project Background and Prior Research on Economic Growth Paths*** – study objectives, characteristics of non-metro Appalachian counties, classification of economic development growth paths, and synopsis of white paper findings on theory relating to economic development growth paths.

- ***Volume 2, Case Studies of Local Economic Development Growth Processes*** – findings related to growth paths as observed for selected case studies covering manufacturing industry specialization clusters, supply chain-based development, tourism-based development, advanced technology development, and diversification from resource-based economies.
- ***Volume 3, Statistical Studies of Spatial Economic Relationships*** – findings from a series of econometric modeling and GIS-based analyses, focusing on roles of spatial adjacency, market access and transportation in determining economic growth and development of trade centers.
- ***Volume 4, Tools for Economic Development & Study Conclusions*** – description of new and updated tools available to ARC and its Local Development Districts to assess economic development opportunities and potential directions for economic growth.
- ***Appendices*** – (A) Spatial Analysis of Economic Health, (B) Economic Analysis of Hub-Spoke Relationships, (C) White Papers on Economic Growth Theories, (D) Literature Review of Empirical Studies on Spatial Influences in Economic Development

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- Economic Development Research Group, Inc. (EDRG) – Lisa Petraglia (Project Director), Glen Weisbrod and Teresa Lynch, with research support from Tyler Comings and Brett Piercy;
- Regional Technology Strategies, Inc. (RTS) –Stuart Rosenfeld, Phil Psilos and Dan Broun.
- Massachusetts Institute of Technology, Department of Urban Studies & Planning (MIT-DUSP) – Prof. Karen R. Polenske, Prof. Joseph Ferreira, Jr. and Ayman Ismail, with research support from Tan Zhijun, Isabelle Xin Li, Yi Xu and Leigh Graham.

The project also benefited from the expertise of outside policy and research experts who reviewed various project documents, participated in meetings and provided technical guidance: Deb Markley (Co-Director of the Center for Rural Entrepreneurship, a Rural Policy Research Institute), Joseph Cortwright (Vice-President of Impresa Consulting), Ken Poole (Executive Director of ACCRA: The Council for Community and Economic Research), David Freshwater (Professor of Agricultural Economics and Public Policy at the University of Kentucky), David McGranahan and Luc Anselin (Professor, Dept. of Agriculture & Consumer Affairs and Regional Economics Applications Laboratory at the University of Illinois, Urbana- Champaign).

Overall project direction and oversight was provided by Dr. Greg Bischak of the Appalachian Regional Commission, whose wide range of research experience served to focus the project team on the development of policy applications. Important insight and suggestions were also provided by officials of the Appalachian Regional Commission who participated in a day-long symposium with the project team, including Thomas Hunter (executive director of ARC, Ann Pope (federal co-chair of ARC) and Rick Peltz (alternate federal co-chair). In addition, Ken Wester and Jason Wang of ARC assisted the project team in collecting and assembling transportation and geographic data.

Finally, the project team acknowledges the important role of prior ARC-funded research studies by Andrew Isserman, Ed Feser and Oleg Smirnov that provided a foundation for this project to build upon.

1

INTRODUCTION

1.1 Background and Objective

(A) Background: Growth Paths for Rural Economic Development

The Appalachian Region spans many diverse local economies (across 410 counties in 13 states), but is generally characterized by a greater degree of economic hardship and poverty than the nation as a whole. The Appalachian Regional Commission (ARC) was started specifically to help improve economic conditions in the region through a series of infrastructure and area development programs, accompanied by an active research program to help increase the effectiveness of those programs.

It has become clear that the most distressed economic conditions are generally occurring in the more isolated and rural parts of Appalachia, and that targeted efforts are needed to address those conditions. At the same time, it has also become clear that “in-vogue” economic development strategies, which often focus on seeking large-scale high-tech cluster development, are not necessarily appropriate or realistic for isolated, rural areas. Accordingly, the ARC embarked on a series of efforts to enhance our understanding of the alternative paths of growth that can be appropriate for rural areas, and ways that local development districts can move down those paths. The *Sources of Growth* project grew out of that effort.

The starting premise of this project is that there can multiple paths that an area can pursue in successfully enhancing job and income creation. They may build on natural resources, cultural resources, human resources, local amenities, institutional facilities or location advantages. The resulting direction of economic growth may involve manufacturing or supply chain development, resource extraction or tourism development, educational development or trade center development. For any specific area, though, some growth paths are much more likely to succeed than others. So successful economic development becomes a matter of first understanding the possible growth paths that may be relevant for a region, then assessing the best directions and pursuing the necessary steps to make them succeed.

(B) Objectives: Building on Prior Research

The *Sources of Growth* project emerged as a logical (and much needed) step from regional growth research – much of it ARC sponsored - to understand factors affecting economic growth, persistent distress, and implications for local policy initiatives in Appalachia’s non-metro counties. It builds upon a program of prior ARC-funded research that has sought to explain why some parts of Appalachian have economically outperformed others and been more successful in moving out of economic distress, and what practically can be done to raise the economic well-being of communities long in need. Key prior ARC studies on these topics are listed in Exhibit 1-1 (table).

Exhibit 1-1. Prior ARC-Funded Studies Pertaining to Economic Growth Patterns

- *Amenities and Rural Appalachian Growth* (Deller, 2003)
- *An Assessment of the Economic Base of Distressed and Near-Distressed Counties in Appalachia* (Smirnov and Smirnova, 2000)
- *An Assessment of Entrepreneurship in Local Appalachian Economies* (CFED, 1998)
- *An Assessment of Labor Force Participation Rates and Underemployment in Appalachia* (Keystone Research Center, 2001)
- *The Economic Effects of the Appalachian Regional Commission* (Isserman and Rephann, 1995)
- *Analysis of Business Formation, Survival and Attrition Rates of New and Existing Firms and Related Job Flows in Appalachia* (Brandow Co., 2001)
- *The Appalachian Economy, Establishment and Employment Dynamics 1982-1997: Evidence from the Longitudinal Business Database* (Foster, 2003)
- *Exports, Competitiveness, and Synergy in Appalachian Industry Clusters*, Rosenfeld, 1997
- *Birth and death of Manufacturing Plants and Restructuring in Appalachia’s Industrial Economy, 1963-1992*, Jensen, 1998
- *Regional Technology Assets and Opportunities: The Geographic Clustering of High-Tech Industry, Science and Innovation in Appalachia*, Feser and Goldstein, 2002
- *Core-Periphery Effects on Appalachian Regional Growth*, Moore, 1994
- *Trends in National and Regional Economic Distress, 1960-2000*, Wood, 2005
- *Building on Past Experiences: Creating a New Future for Distressed Counties*, Glasmeier and Fuellhart, 1999.
- *Branch Plants and Rural Development in the Age of Globalization*, Glasmeier et al, 1995

This new project has sought to address two limitations with existing research on sources of economic growth: (a) the literature features a multiplicity of theoretical approaches, with different perspectives for viewing the same growth phenomena; and (b) much of the current research is not accessible to practitioners, nor developed in ways that can directly help communities to pursue economic development.

Accordingly, this project has generated a series of reports collectively aimed at fulfilling three core objectives:

- a) to span currently divergent lines of research on economic growth in order to build a broader understanding of factors that can facilitate economic development;
- b) to advance the state of data analysis concerning how spatial location and access may affect the economic growth of ARC counties; and
- c) to translate these activities into understandable findings and applications usable by practitioners.

1.2 Study Components and Team Roles

(A) Study Components

The Sources of Growth project involved four research undertakings:

- (1) *thematic “white papers”* summarizing the distinguishing features of various economic development paths and the theories underlying them,
- (2) *case studies* of economic development paths occurring in various non-metro areas in Appalachia,
- (3) *statistical studies* of economic growth factors and the role of spatial relationships in Appalachia’s non-metro counties,
- (4) *enhancement of tools* for assessing local economic growth opportunities.

The white papers reviewed existing theories and literature in the fields of regional science and economics to describe the mechanisms that affect the nature of a local area economy and how further economic growth occurs. They examined the following forms of local and regional economic development: industry clusters, trade centers, supply chain and dispersal economies, resource-dependent, natural asset and learning-based economic development. They were also reviewed and discussed by an expert panel at a day-long symposium. This process provided an important foundation for identifying the different types of growth paths and the location factors determining their appropriateness for various areas.

The case studies used in-person interviews with local business and government

officials, together with data analysis of economic trends, to provide insight into how the various growth paths have actually taken hold for selected local areas. These case studies also provided a basis for assessing how hypotheses concerning the form and evolution of growth paths matched up (or in some cases, did not match) with actual experiences of those communities. This element of the project thus provided an important basis for refining our understanding of how location factors can enhance, constrain or redirect the direction and degree of economic growth success.

The statistical studies examined time-series data on changes in economic growth patterns and their relationship to spatial isolation, market access and transportation infrastructure. The reasons for this focus were: (1) recognition that while the various paths of economic growth served different markets, they all depended in some way on access; (2) that many of ARC's programs have aimed to reduce isolation and improve access, and (3) the availability of relatively new analytic methods for examining spatial relationships among counties.

The effort to enhance practical tools focused on upgrading the web-based Local Economic Assessment Package (LEAP) available for ARC's Local Development Districts and other economic development agencies to assess economic opportunities and targets for business growth and attraction. Based on findings from the other study elements, additional data sources and analysis measures were identified for evaluating the relevance of economic growth paths for local areas. Some of those additional elements have now been implemented, while others are still planned. .

(B) Study Team Process

Research Team. This research project was a joint effort of Economic Development Research Group, Inc. (EDRG), Regional Technology Strategies, Inc. (RTS) and the Department of Urban Studies & Planning at the Massachusetts Institute of Technology (MIT-DUSP).

- EDRG managed the overall project, organized the one-day symposium and expert panel review processes; developed three of the case studies, conducted time series analysis of access impacts on economic growth, developed a set of growth path indicators for the Local Economic Assessment Package, and authored the summary documents on overall study findings.
- RTS staff contributed to the classification of growth paths, developed a white paper on learning-based clusters, participated in the symposium and completed three of the case studies.
- MIT-DUSP provided the core literature review and data set assembly, developed white papers on trade centers and resource-based economies, participated in the symposium, conducted statistical analysis of economic "hub-spoke" relationships, and also conducted spatial correlation analysis of county-level economic growth outcomes.

Expert Panel for Research and Policy. An expert panel also contributed to the study by reviewing the white papers developed by project team members to summarize the state of theory and research on economic development strategies and growth paths. A One-day symposium was then held to discuss the content of the white papers, their policy implications, and the priorities for further research. The symposium was attended by the expert panel, officials of ARC and the project team. The goal was to refine our understanding of how various growth paths actually evolve and how they can be encouraged in non-metro parts of Appalachia. (A summary of findings on economic development theory from the white papers is included in this volume, and additional material from the white papers appears in a separate Appendix volume.) The expert panel was comprised of:

- Deb Markley - Co-Director of the Center for Rural Entrepreneurship, a Rural Policy Research Institute.
- Joseph Cortwright – Vice-President of Impresa Consulting and former chief economic development staff for the Oregon Legislature.
- Ken Poole - Executive Director of ACCRA: The Council for Community and Economic Research;
- David Freshwater –Professor of Agricultural Economics and Public Policy at the University of Kentucky; formerly Program Manager of TVA Rural Studies Program
- David McGranahan – Senior Economist at the US Dept of Agriculture’s Economic Research Service, specializing in rural development.

Technical Modeling Expertise. Additional technical support for spatial modeling issues was provided by Luc Anselin, Professor Dept. of Agriculture & Consumer Affairs and Senior Research professor of the Regional Economics Applications Laboratory (REAL), University of Illinois, Urbana- Champaign. He provided advice on methods for investigating spatial influences on economic growth patterns, led a day-long seminar on *GeoDA* spatial analysis software, and provided comments on several elements of the MIT team’s spatial analysis findings.

(C) Reports on Study Findings

Results of the *Sources of Growth* project are presented in a series of volumes:

- ***Executive Summary*** –synthesis of findings from all of the project’s research components.
- ***Volume 1, Project Background and Prior Research on Economic Growth Paths*** – study objectives, characteristics of non-metro Appalachian counties,

classification of economic development growth paths, synopsis of white paper findings on theory relating to economic development growth paths, and empirical literature review on spatial growth modeling studies.

- **Volume 2, Case Studies** –findings related to growth paths as observed for selected case studies covering manufacturing industry specialization clusters, supply chain-based development, tourism-based development, advanced technology development, and diversification from resource-based economies.
- **Volume 3, Spatial Analysis** – findings from a series of econometric and statistical modeling studies and GIS-based analyses, focusing on roles of spatial adjacency, market access and transportation in determining economic growth and development of trade centers.
- **Volume 4, Tools for Economic Development** – description of new and updated tools available to ARC and its Local Development Districts to assess economic development opportunities and potential directions for economic growth.
- **Appendices** – (A) Spatial Analysis of Economic Health, (B) Economic Analysis of Hub-Spoke Relationships, (C) White Papers on Economic Growth Theories

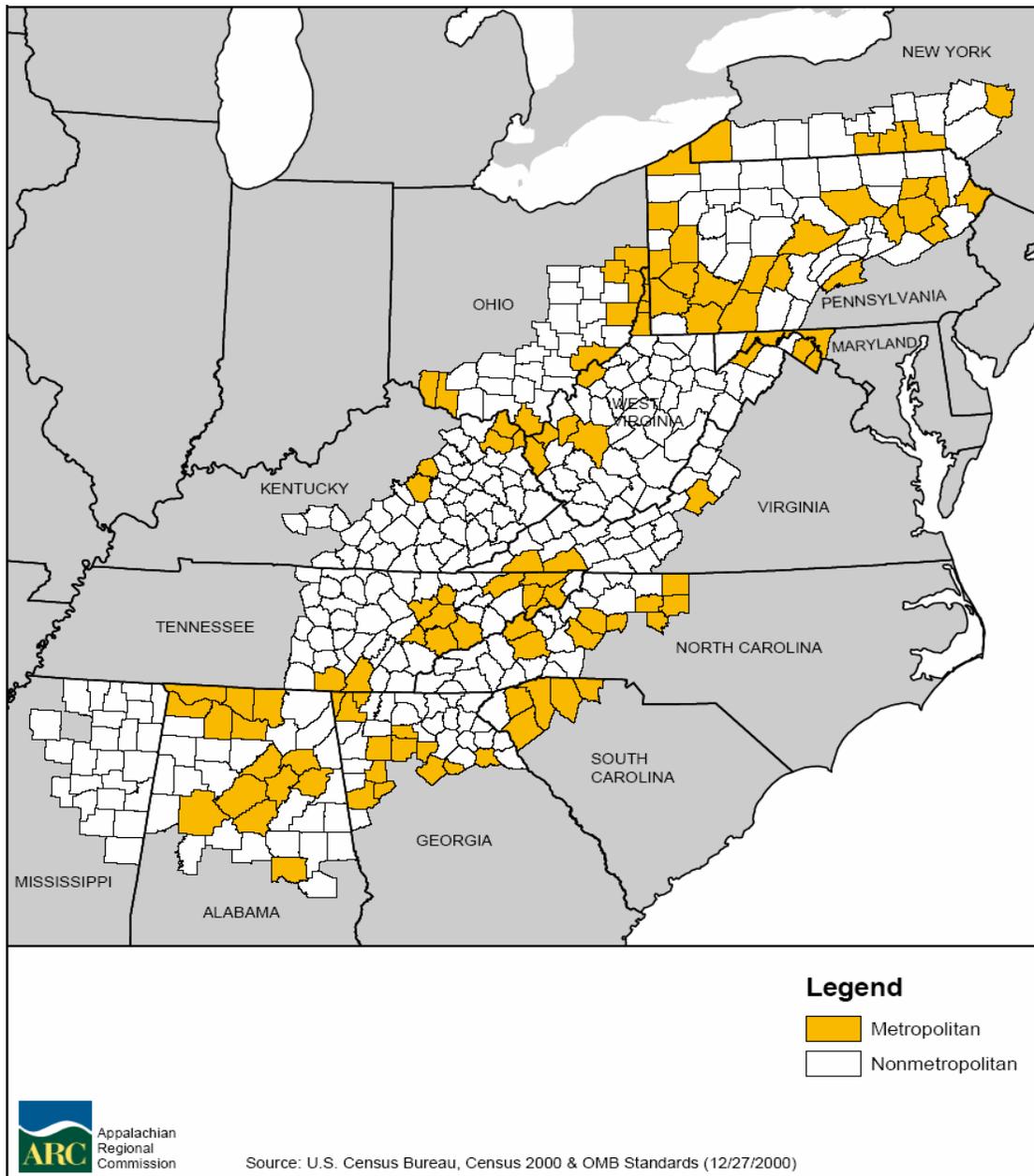
1.3 Classification of Appalachian Counties

The Appalachia Region is an area of 410 counties, spanning thirteen states. For purposes of this study, there are two key attributes that vary among the counties. They are: (1) level of urbanization and (2) level of economic distress. This study focuses on the economic development of non-metropolitan areas, which are the counties where the highest levels of economic distress have tended to occur.

(A) Categories of Urbanization

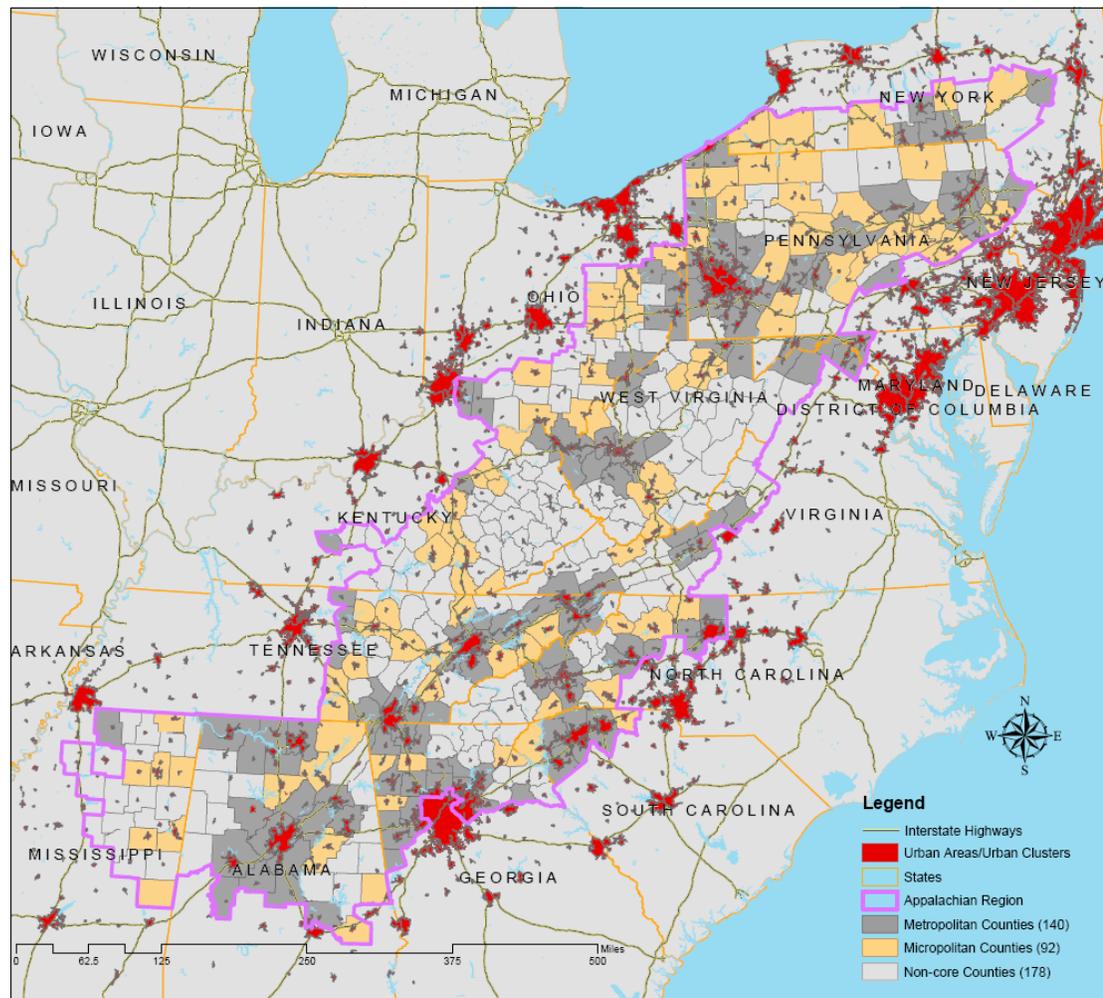
The level of urbanization is defined in terms of a distinction between metropolitan and non-metro areas. Exhibit 1-2 (map) shows the location of metropolitan and non-metro counties within Appalachia. A “metropolitan area” is defined as a county or set of counties with an urban cluster having a population of 50,000 or more in which at least 50% of the residents work also work in that area. The remaining counties are classified as “non-metro.” Altogether, the Appalachian region has 140 metropolitan counties (with a total 2000 census population of 14.1 million) and 270 non-metro counties (with a total population of 8.7 million,).

Exhibit 1-2 Metro and Non-Metro Classification of Appalachian Counties



The 270 “non-metro” counties are further subdivided into 92 “micropolitan areas” (each having a total population base of 10,000 to 49,999 with at least 25% of the workers residing within that area) and 178 “non-core” counties (also more formally referred to as OBSA – “Outside of Core-Based Statistical Areas”). Exhibit 1-3 (map) shows the location of the micropolitan and non-core counties. Altogether, the Appalachian region has 92 micropolitan counties (with a total population of 4.9 million) and 178 non-core counties (with a total population of 3.8 million).

Exhibit 1-3: Micropolitan and Non-Core Classification of Appalachian Counties



Source: map generated by the MIT Multiregional Planning Research Group.
 Data Sources: 2004 Urban Influence Codes, Economic Research Services, U.S. Department of Agriculture; 2000 Cartographic Boundary Files, U.S. Census Bureau; 2004 National Highway Planning Network, Federal Highway Administration, U.S. Department of Transportation.

(B) Categories of Economic Performance

The level of economic performance of Appalachian counties is classified as one of four categories: “distressed,” “transitional,” “competitive” and “attainment.” Each year, the ARC updates its tracking of the economic performance of the region’s counties. Using a recent three-year moving average on the unemployment rate, per-capita income levels and the Census poverty rate, thresholds are applied to create the four classes of economic performance. Exhibit 1-4 shows how the ARC economic performance categories are defined.

Exhibit 1-4. Criteria for County Economic Performance Levels, FY 2005

Economic Level	No. of Counties in Appalachia	2000-2002 Three-Year Average Unemployment Rate		2001 Per Capita "Market" Income		2000 Census Poverty Rate	
Distressed	82	7.3% or more [150% of U.S. 4.8%]	and	\$17,627 or less [67% of U.S. \$26,309]	and	18.6% or more [150% of U.S. 12.4%]	OR twice U.S. poverty rate & qualify on one other indicator
Competitive	20	4.8% or less [100% of U.S.]	and	\$21,047 - \$26,308 [80% of U.S. = \$20,541]	and	12.4% or less [100% of U.S.]	
Attainment	8	4.8% or less [100% of U.S.]	and	\$26,309 or more [100% of U.S.]	and	12.4% or less [100% of U.S.]	
Transitional	300	All counties not in other classes. Individual indicators vary.					

Sources: U.S. Department of Labor - Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS), 2000-2002 (employment data); U.S. Department of Commerce - Bureau of Economic Analysis, Regional Economic Information System (REIS), 2001 (income data); U.S. Department of Commerce - Bureau of the Census, 2000 (poverty data).

Exhibit 1-5 shows how the relationship between level of urbanization and level of economic performance. It is notable that nearly all of the counties with an economic performance rating of “attainment” or “competitive” are within metropolitan areas. Conversely, most of the counties with an economic performance rating of “distressed” are (non-core) rural areas.

Exhibit 1-5. Relationship Between Urbanization and Economic Performance

Urban Influence Codes (2003)	“Attainment” & “Competitive”		“Transitional”		“Distressed”		All of Appalachia	
	# of counties	Population (2000)	# of counties	Population (2000)	# of counties	Population (2000)	# of counties	Population (2000)
Metropolitan	26	5,229,995	104	8,552,415	10	359,457	140	14,141,867
Micropolitan	3	120,353	69	4,152,993	20	640,796	92	4,914,142
Non-Core (rural)	1	18,324	86	1,965,980	91	1,785,929	178	3,770,233
Grand Total	30	5,368,672	259	14,671,388	121	2,786,182	410	22,826,242

Data source: Economic Research Services, U.S. Department of Agriculture, 2003.
<http://www.ers.usda.gov/briefing/rurality/UrbanInf/>

This project focuses specifically on the non-metro counties which account for nearly all of the under-performing areas. Exhibit 1-6 shows that distressed counties exist across all parts of Appalachia, though they are most strongly represented in the central part. Concerns have been raised in current regional growth research (Isserman 2005) that more important than a metro – non-metro county distinction would be classification distinguishing degrees of rurality at the sub-county level, since there are many cases of a county containing both a thriving urban area and poor rural communities. The USDA-ERS’ *Beale Codes* offer further gradations on county classifications based on population densities and whether or not an adjacency to a metro area exists. Those more complicated codes are used in the empirical analysis parts of this project, as described later (refer to Volume 3).

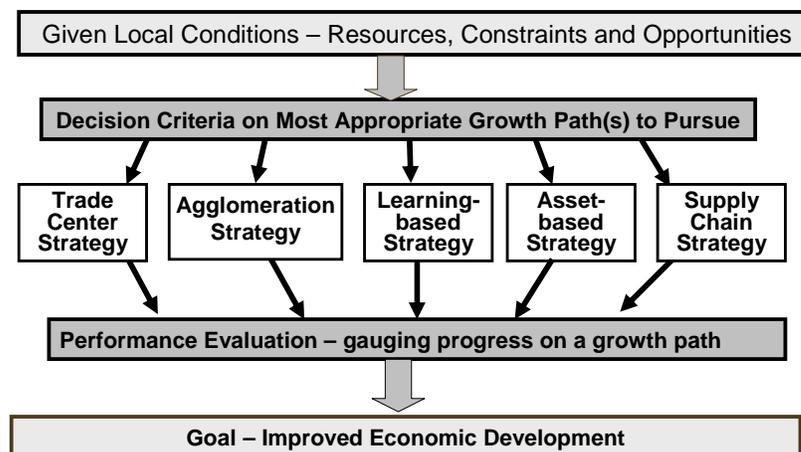
Exhibit 1.6 County Economic Performance Ratings by Geographic Region

		Appalachia's Major Region			Total
		North	South	Central	
# of Non-metro Appalachian Counties		91	102	77	270
arc status	<i>transitional</i>	74	83	36	193
	<i>distressed</i>	16	18	41	75
	<i>competitive</i>	1	1	0	2

1.4 Classification of Economic Growth Paths

Exhibit 1-7 (schematic) illustrates five basic types of growth paths, along with the process for initially assessing their appropriateness for a given area, and later evaluating program efforts to pursue them.

Exhibit 1-7. Types of Regional Growth Paths and their Use



This research study began with a general articulation of specific growth processes that have been emerging in the regional science literature and shown some success in the applied economic development field. The initial study phase focused on refining our understanding of the select set of growth theories and seeing how well each could be adapted to address rural locations such as Appalachia. A set of white papers was developed and became the basis for holding a one-day symposium in Washington DC, with comments led by an expert panel. A synopsis of the key conclusions from these white papers is presented in Chapter 2.

The specific economic growth paths examined included: trade center development, industry concentration clusters, dispersal economies (e.g. supply-chain development), resource-dependent growth, and asset-based growth (including both learning-based and natural amenity-based development). A brief description of each is provided in Exhibit 1-8 below. The theory behind these growth paths is discussed in the following chapter, and case study examples of them are provided in a separate report volume (refer to Volume 2).

Exhibit 1-8. Definition of Five Major Classes of Economic Growth Paths

Basis for County’s Economy Growth	Description
Trade Center	Growth pattern emanating from a small urban cluster that provides goods and services to the exurban communities & rural hinterlands
Agglomeration (e.g. cluster economy)	Growth resulting from geographic concentrations of interconnected businesses and institutions that enhance the productivity of the core industries.
Supply-Chain (e.g. dispersal economy)	Remote location is chosen over the central metropolitan area to host a node of economic activity (distribution or assembly) that is part of a larger (geographic) production chain.
Natural Amenity or Cultural Assets	Growth as a result of either quality-of-place attracting new households –or – efforts to actively develop & promote cultural, recreation, eco-tourism venues and their supporting visitor services. A variant exists based upon natural-resource assets that are tied to extractive activities such as mining, logging.
Knowledge (Learning) Assets	Growth opportunities leveraged from the collective knowledge embodied in the region, including social capital, technical applications / commercialization, institutional assets (educational and financial), entrepreneurial start-ups.