CHAPTER 1 INTRODUCTION

1.1. CONTEXT FOR ARC HEALTHCARE ACCESS INDEX

In 2010, federal health reform statutes, PL 111-148 and PL 111-152, (ACA) changed the landscape of healthcare delivery. More people will be covered; new delivery systems will be required, demonstrations will be funded, and staffing requirements will change. Because much of the coverage reform involves the Medicaid program, states' healthcare cost burden will increase. Reform changes will work within the framework of existing programs, many of which favor areas outside of the Appalachian Region.

The Appalachian Regional Commission (ARC) has a rich history of improving healthcare access. Initiatives supported by the Commission's Section 202 program include development of regional infrastructure with an emphasis on primary care, workforce development, development of the framework for Medicare and Medicaid programs to recognize and reimburse for services in Rural Health Clinics, strengthening the J-1 Visa program for physicians who agree to serve in underserved Appalachian communities, calling attention to health status disparities in the region, and leveraging Center for Disease Control (CDC) funding for an Appalachian cancer disparity program. Health reform calls for a new look at an old problem.

A literature review explored several dimensions of healthcare cost and access including:

- Access to health resources,

- Medical bankruptcy,

- Medicare/Medicaid participation rates,

- Impact of healthcare reform on state budgets, and

- Measures of healthcare disparity.

1. 2 LITERATURE REVIEW
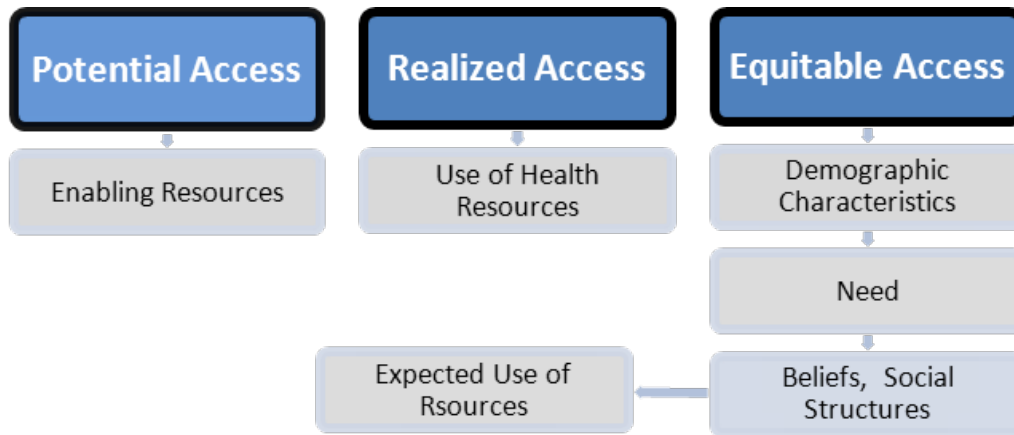
1.2.1 HEALTHCARE ACCESS

Sources for the review include policy briefs, annual expenditure reports, policy analyses, government projections, and actuarial reports. Given the timing of passage of ACA, when this report was compiled, few useful articles dealing with healthcare reform impact on state budgets were available in the peer-reviewed journals.

Odin Anderson explored the definition of healthcare access in a classic paper first published in the late 1960's and the concept has been revisited in the context of appropriate care versus quantity of care.[3] Healthcare social research has asked repeatedly, "Is it better to measure realized access, or utilization, rather than supply?"

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[3] Anderson, Ronald M., Revisiting the Behavioral Model and Access to Medical Care: Does it Matter, Health and Social Behavior Vol. 36 (March): 1-10, 1995.

Figure 4 displays the evolution of healthcare access definitions from simple supply measures to an understanding that other barriers may prevent use of services and, that need for services may not be uniform across all populations.

FIGURE 4 – HEALTH CARE ACCESS EARLY DEFINITIONS

Source: Odin Anderson 1967, modified by PDA

Four decades later, as illustrated in Figure 5, we realize that access to health care is determined by many more complex factors involving behavior, cost, and system organization as well as resource availability. We have also learned that equal access may not produce equal outcomes.

FIGURE 5- EMERGING MODEL OF HEALTH CARE ACCESS
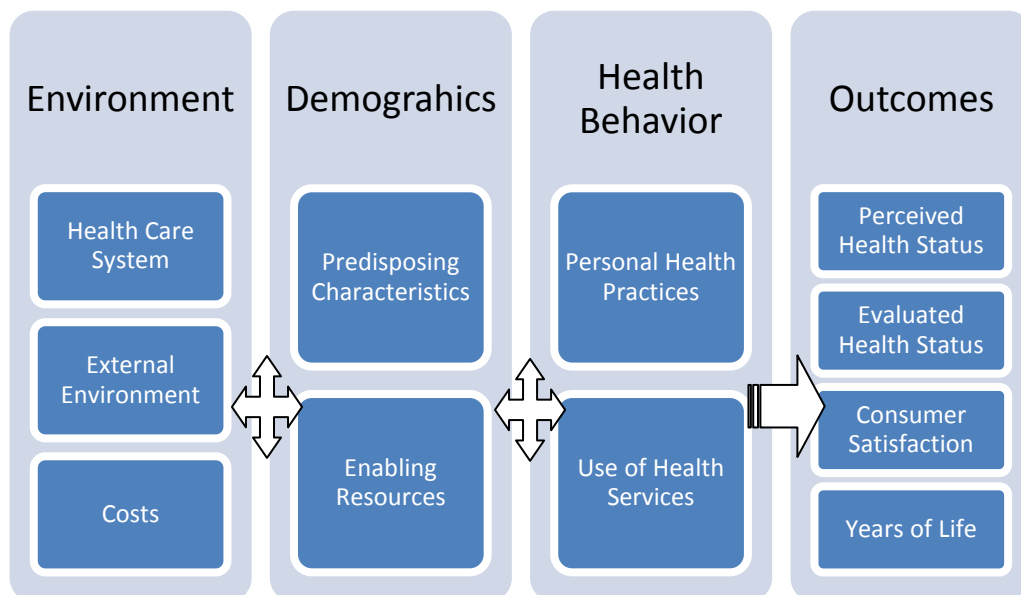
Source: Ronald Anderson 1995, modified by PDA

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In this report, we examined sources suggested in the ARC solicitation and supplemented these with literature and resources in which geographic health disparities were the substantive or methodological focus. The U.S Agency for Healthcare Research and Quality (AHRQ) disparities report cites extensive prior research that indicated people who are uninsured experience negative health effects.

The uninsured are less likely to receive medical care, more likely to have higher mortality rates, and more likely to experience adverse health outcomes. Lack of adequate insurance can also lead to greater financial burdens for families and individuals faced with health crises.[4]

In *An Analysis of Disparities in Health Status and Access to Medical Care in the Appalachian Region*, an examination of the health disparities in the Appalachian Region indicated an uneven distribution of health resources across counties in the region.[5] Although counties in metropolitan regions have greater access to medical services, many counties do not have access to critical medical specialty resources such as those for cardiovascular care, cancer treatment, and rehabilitation. The lack of cardiovascular resources could help to explain the high mortality rate from heart disease, lung cancer, and chronic obstructive pulmonary disease that have been found in the central Appalachian Region.

The report also looked at various socioeconomic factors in the Appalachian Region to determine the impact on health disparities. *Underlying Socioeconomic Factors Influencing Health Disparities in the Appalachian Region* selected five factors to focus on as potential determinants of health disparities: Percent Urban Population, Median Family Income, Unemployment Rate, Percent of Persons Living in Poverty, and the Percent of Persons without Health Insurance. The two factors that "consistently define localized areas that suffer the highest rates of premature mortality" were the percent of persons living in poverty and persons without health insurance.[6]

This report challenges some of those earlier findings about insurance and socioeconomic influences on healthcare access.

1.2.2 COSTS OF CARE AND BANKRUPTCY

At one time, cost was a minor issue and supply issues dominated. Now, healthcare costs are escalating, and are a more critical access factor, representing 17.3 percent of the Gross Domestic Product (GDP) in 2009. Of greatest concern is the rate of increase, with Medicaid costs increasing almost 10 percent over the prior year, and Medicare growing 8 percent. Private costs grew only 3 percent. These increases occurred during a major national recession. In 2009, the economy grew less than one percent; yet, private insurance rates increased 13 to 40+ percent that year. This is unsustainable and presents economic challenges at the individual, corporate and government level. The 2010 health reform statutes, ACA, contain hundreds of initiatives aimed at reducing the cost and increasing the effectiveness of the nation's healthcare system. ACA also mandated study of ways to measure national health status.

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[4] Ibid.

[5] Joel Halverson, Lina Ma, and E. James Harner, "An Analysis of Disparities in Health Status and Access to Medical Care in the Appalachian Region," Appalachian Regional Commission, November 2004.

[6] Joel Halverson and Greg Bischak, "Underlying Socioeconomic Factors Influencing Health Disparities in the Appalachian Region," Appalachian Regional Commission, March 2008.

Cost of services drives up the burden of healthcare access. Taking the societal viewpoint, AHRQ cites costs of $65 billion to $130 billion as the result of early death and poor health outcomes for the uninsured. Yet costs can also become a burden through increasing individual and family debt, especially in rural areas or among farming communities.[7] A survey produced by the Access Project shows that while 95 percent of family members who were farmers were insured, 29 percent of the non-elderly respondents had medical debt. Several studies show that medical debt can lead to "housing problems, increased credit card debt, ruined credit records, and in the worst cases, bankruptcy."[8]

One survey of 2007 bankruptcy filers shows that 62 percent of all bankruptcy filings in 2007 were due to medical problems. The percentage of bankruptcies that reported medical problems rose 50 percent between 2001 and 2007.[9]

A review of the research literature and consultation with the Health Law and Policy staff of the University of North Carolina and the Sanford Policy Research Center at Duke University produced no information about medically related bankruptcies for smaller geographic areas and the national sample was of insufficient size to generate even state level estimates. The Himmelstein study referenced by the ARC request for proposals was based on a national survey of bankruptcy filers related to their perception of medical debt. There is no national database or synthetic estimate of medical bankruptcy. This issue is discussed in more detail in Chapter 5.

1.2.3 FEDERAL FUNDING FOR HEALTHCARE

Understanding the source of funding for healthcare is important to building an index of Healthcare Access and Cost. The federal government supports healthcare directly in the form of insurance coverage for Medicare, Department of Defense and Veterans Administration beneficiaries, and indirectly for Medicaid beneficiaries. It also supports healthcare services in the way of grants that are used to offset costs of serving uninsured persons. Grants from the National Institutes of Health, largely to academic medical centers, and from the Bureau of Community Health Services/ Health Resources and Services Administration (HRSA), largely to Community Health Centers, National Health Service Corps, and Substance Abuse and Mental Health Administration (SAMSA) represent the majority of these payments.

The major insurance programs include: Medicare for persons over 65 and for disabled persons, Medicaid for certain low income, elderly, blind and disabled persons and private health insurance.

The lack of affordable healthcare carries tremendous social and economic costs for the insured and uninsured alike. Uninsured persons are less likely to access treatment for preventable illnesses, and when they require treatment, their health condition is often worse than others. When uninsured people access emergency services, the cost is often passed on to hospitals and insured patients in the form of higher healthcare costs and insurance premiums.

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[7] "National Healthcare Disparities Report, 2009". Agency for Healthcare Research and Quality. Rockville, MD. 2009. Accessed December 2010. www.ahrq.gov/qual/nhdr09/nhdr09.pdf

[8] The Access Project, "2007 Health Insurance Survey of Farm and Ranch Operators", September 2007.

[9] David U. Himmelstein, Deborah Thorne, Elizabeth Warren, and Steffie Woolhandler. Medical Bankruptcy in the United States, 2007: Results of a National Study. American Journal of Medicine, Volume 122, Issue 8 (August 2009).

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The latest data from the Census Bureau has the percentage of U.S. population without health insurance at 16.7 percent in 2009, which is an increase from 15.4 percent in 2008.[10] This is equal to 50.7 million uninsured individuals in 2009. There were a total of 253.6 million insured individuals, but this is a decrease from 255.1 million in the prior year, the first time since 1987 – the first year where comparable insurance data was collected – where the number of people with health insurance has decreased.

Full-time workers had an uninsured rate of 15.2 percent versus non-workers, who had an uninsured rate of 29.1 percent. This was up 4.7 percent from 2007. For full-time workers, the change in uninsured was not statistically significant from 2007. The rate of employment-based coverage is 63.9 percent and is the lowest rate since 1987, the latest year for which statistics are available.[11]

The number of individuals covered by government health programs increased in 2009, with 30.6 percent of insured people covered under a government program. This is the highest government coverage rate since 1987. In 2009, 93.2 million individuals under a government health program with 47.8 million under Medicaid and 43.4 million were covered under Medicare. While the Medicaid coverage rate is the highest since 1987, the change in Medicare coverage rate was not statistically different from 2008.[12]

Geographic location had some impact on uninsured rates; individuals living in metropolitan statistical areas had an uninsured rate of 16.8 percent. Those living outside of metropolitan areas had an uninsured rate of 16.0 percent.[13]

Medicaid is a state/ federal insurance program for low income persons who are also old, blind, disabled, or dependent children. It also includes a State Children's Health Insurance Program option (SCHIP or CHIP) that expands coverage for low income families. Medicaid is mandated by Title XIX of the Social Security Act and the federal government matches the state investment, but the state provides coverage to the beneficiary. The federal match, called the Federal Medicaid Assistance Percentage (FMAP) is based on relative economic wealth of the state. It is highest in states with the lowest socioeconomic status (SES), but is never less than 50 percent. Appendix C contains the current FMAP rates.

To encourage states to expand Medicaid coverage, with programs like SCHIP and the expanded benefits in health reform, as part of the 2009 stimulus legislation, American Recovery and Reinvestment Act, ARRA, the FMAP was temporarily subsidized by a federal contribution that increased all states base federal participation by 6.2 percent in through 2010. Congress later extended the FMAP increase through 2011. Once this expires, states will return to their prior level of federal match. The highest federal match in 2011 is 82.31 percent, available to the Appalachian state of Mississippi. West Virginia and Kentucky have the next highest match rate in Appalachia with 81.27 percent and 80.04 percent, respectively. See Appendix C. In addition to ARRA, health reform, ACA significantly changed the landscape of Medicaid expenses for states. There are new FMAP rates that apply just to the expected Medicaid expansion.

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[10] US Census Bureau, "Income, Poverty, and Health Insurance Coverage in the United States: 2009." US Census Bureau, September 2010. http://www.census.gov/prod/2010pubs/p60-238.pdf. Accessed January 3, 2011.
[11] Ibid, p. 27.
[12] Ibid, p. 24.
[13] Ibid, p.28.

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1.2.4 STATE AND LOCAL SPENDING ON HEALTHCARE

States bear a significant portion of healthcare cost. State payments occur in public health programs, state employee health insurance and Medicaid. Many state health department programs are partially or wholly funded by federal grants. State employee programs are largely contracted to private insurers, but paid by the states. Medicaid is the largest state health cost. State Medicaid burden is shared with the federal government, based on a distributive formula that includes both state average income and the number of options offered in a state's Medicaid program.

It is often reported that states spend, on average, almost 22 percent of their state budgets on Medicaid, but this figure can be misleading because it considers federal as well as state funds. On average, federal funds account for 56.2 percent of all Medicaid spending. Average state spending on Medicaid as a share of state general fund budgets is actually 16.8 percent, and just 13.4 percent as a share of spending from all state funds. (2007) [14]

In some states with more favorable federal Medicaid matching rates, the different measures can result in dramatically different stories because federal funds can account for as much as two-thirds to three-quarters of total Medicaid spending. For example, using the measure commonly cited, Medicaid accounts for 22.4 percent of total spending in Mississippi, but when only state general funds are counted and federal funds are excluded, Medicaid's share of the Mississippi budget drops to just 7.8 percent. [15]

Some argue that rather than preventing states from spending on other priorities, federal funds coming into a state to pay for Medicaid services actually help states finance other priorities. For example, Medicaid often pays for the medical services associated with special education services for children and covers the cost of services, such as community mental healthcare, that states or localities would pay for in the absence of Medicaid; this helps stretch their state and local dollars. In addition, federal dollars to states for Medicaid services free up state dollars for other priorities that would otherwise have been spent on healthcare. [16]

These distinctions are critical in reviewing reports like National Association of State Budget Officers (NASBO) recent State Expenditure Report that Medicaid made up 20.7 percent of total state expenditures in 2008. [17] Other state health programs and CHIP were included in a separate "other" category, which included non-health expenditures. Medicaid expenditures were the second largest state spending category behind elementary and secondary education. NASBO estimates $310.9 billion was spent on Medicaid in 2008 and this was a 4.4 percent increase over 2007. [18]

A Kaiser Family Foundation policy brief on the Medicaid financing responsibilities of federal and state government cites Congressional Budget Office (CBO) estimates that the federal government will be financing the "vast majority" of Medicaid expansion costs that come from health reform mandates. Prior to health reform, expansion would cover an additional 16 million individuals under Medicaid and CHIP by 2019. After health reform, CBO projected the federal government will spend $434 billion on Medicaid and CHIP expansion from 2010 through 2019 and states will provide an additional $20 billion in the same time span.

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[14] Georgetown Center for Health Policy, Medicaid and State Budgets, Looking at the Facts, May 1, 2008. http://ccf.georgetown.edu/index/cms-filesystem-action? file=ccf+publications%2Fabout+ medicaid%2Fnasbo+final+5-1-08.pdf. Accessed document 2010.

[15] Ibid.

[16] Ibid.

[17] National Association of State Budget Officers, "Fiscal Year 2008 State Expenditure Report," December 2009. http://www.nasbo.org/LinkClick.aspx?fileticket=%2fZWfTvJG8j0%3d&tabid=107&mid=570. Accessed January 3, 2011.
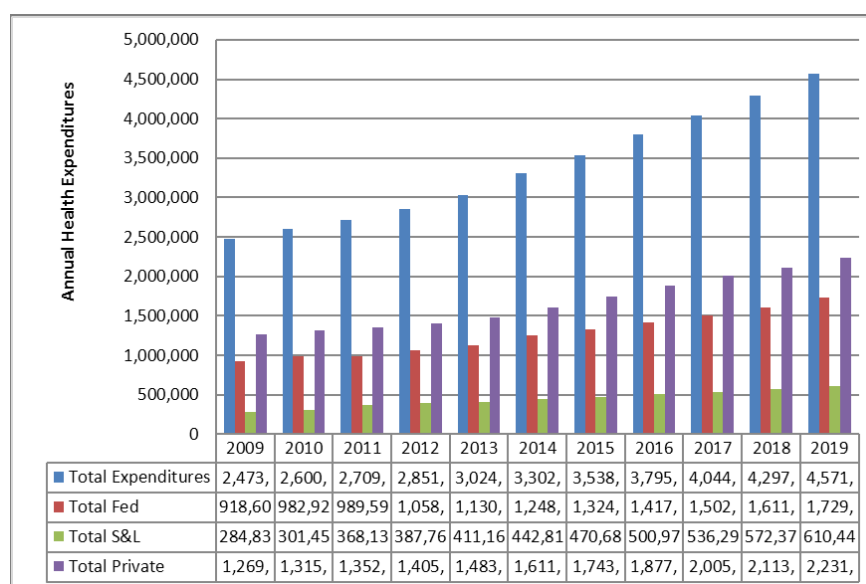
[18] Ibid, p. 44.

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The federal government will be financing 96 percent of all Medicaid and CHIP costs associated with healthcare reform according to these estimates; states will be financing the remaining 4 percent.[19] The brief notes that "states that have the furthest to climb in terms of meeting the new eligibility requirements will see the largest increases in federal financing."[20] CBO estimates for state-level costs were at an aggregate level and not reported on a state-by-state basis.

Andrea Sisko, et al. reported on revised projections of the national health expenditures through 2019. The projections are based on the CMS Office of the Actuary Health Reform Model and actuarial cost estimates. These state and local estimates include Medicaid, Child Health Insurance Program (CHIP), and other spending combined. Based on legislative and regulatory impact from the passage of ACA, CMS is projecting public state and local funds will account for $284.8 billion of the total $2.5 trillion in national health expenditures in 2009.[21] Of this amount, $134.2 billion is for Medicaid and CHIP while the remaining $150.7 billion is for other public spending at the state and local level. See Appendix E.

FIGURE 6 – FORECAST OF STATE AND LOCAL TOTAL HEALTH EXPENDITURES, 2009 -2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Expenditures	2,473,	2,600,	2,709,	2,851,	3,024,	3,302,	3,538,	3,795,	4,044,	4,297,	4,571,
Total Fed	918,60	982,92	989,59	1,058,	1,130,	1,248,	1,324,	1,417,	1,502,	1,611,	1,729,
Total S&L	284,83	301,45	368,13	387,76	411,16	442,81	470,68	500,97	536,29	572,37	610,44
Total Private	1,269,	1,315,	1,352,	1,405,	1,483,	1,611,	1,743,	1,877,	2,005,	2,113,	2,231,

Source: Truffer, et al.

All expenditures will grow. State and local share will rise to 14 percent of total, then level off after 2013 to 12 percent total. By 2019, public state and local spending will increase to $610.4 billion, representing a projected annual growth rate of 7.0 percent between 2009 and 2019.

The state and local growth rate is similar to federal funds, which are projected to grow at 7.1 percent in the same time period, but are higher than total national health expenditures growth of 6.3 percent and private fund growth at 6.0 percent. An annual breakout of the forecast health expenditures is in Appendix A.

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[19] Kaiser Family Foundation, "Financing New Medicaid Coverage under Health Reform: The Role of the Federal Government and States," May 2010. http://www.kff.org/healthreform/upload/8072.pdf. Accessed January 3, 2011.

[20] Ibid, p. 1.

[21] Truffer CJ, et al. Health spending projections through 2019: the recession's impact continues. Health Aff (Millwood). 2010; 29(3):522-529. http://content.healthaffairs.org/ cgi/content/abstract/hlthaff.2009.1074. Accessed November 29, 2010.

A review by Sisko and others noted potential new state costs associated with the setup and administration of Health Insurance Exchanges. The study projects $4.4 billion in startup costs associated with the exchanges from 2011 through 2013. These costs would total $37.7 billion in administrative costs through 2019 and would be approximately 0.2 percent of the national health expenditures. The assumptions used for the exchange costs had some empirical basis as they were drawn upon administration costs for Massachusetts's health insurance exchanges.[22]

1.2.5 IMPACT OF MEDICAID ON STATE ECONOMIC ACTIVITY

The Federal Medical Assistance Percentage (FMAP) for Medicaid has four benefits for states, according to a Kaiser Family Foundation policy brief by Wachino, et al. Medicaid would help states pay for the healthcare costs of low-income citizens, ensure federal matching funds are automatically directed to state budgets, support state administration of the program, and provide fiscal support for both state budget and economies.[23] Research produced for the Kaiser Family Foundation claims that Medicaid spending generates economic activity at a state level and has a positive economic effect.

The economic impact on a state is proportionate to the state's FMAP level. For example, a state with a 60 percent matching rate must cut overall Medicaid spending by $2.40 to save $1 in state Medicaid spending. At a 70 percent matching rate, the required cut in spending increases to $3.33 to save $1 in state funding. The Wachino brief included a review on the state level impact (if available), which is recreated in Appendix D for states in the Appalachian Region. Calculation from Families U.S.A. determined that state spending in Medicaid produced almost a three-fold return on new business activity.[24] According to the group's calculation, state Medicaid spending, in 2001, generated 3 million jobs across the nation. The calculations were based on state Medicaid spending in 2001, and economic multiplier rates were determined from the Regional Input-Output Modeling System (RIMS II) economic model created by the U.S. Department of Commerce.

The economic downturn in 2009 and 2010 created budget shortfalls in many states. Increased unemployment, lower tax revenue, and rising demand for government programs have put states under fiscal pressure.

An analysis by the Kaiser Commission found almost all states forecast a budget gap from 2009 through 2011; 46 states will continue that gap into 2011.[25] Medicaid spending is counter-cyclical, with rising costs and enrollments during weak economic periods. Spending for Medicaid increased by 8.8 percent in 2010, which is the highest growth rate since the prior recession in 2001 and 2002.

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[22] Truffer, Christopher J., Sean Keehan, Sheila Smith, Jonathan Cylus, Andrea Sisko, John A. Poisal, Joseph Lizonitz and M. Kent Cleme. "*Health Spending Projections Through 2019: The Recession's Impact Continues*". Health Affairs (Millwood) 2010, 29. No. 3. Office of the Actuary, CMS. (2010): 522-529. Accessed November 29, 2010. http://content.healthaffairs.org/cgi/content/abstract/hlthaff.2009.1074).

[23] Wachino, Victoria, Andy Schneider and David Rousseau. "Financing the Medicaid Program: The Many Roles of Federal and State Matching Funds". Kaiser Family Foundation, January 2004. http://www.kff.org/medicaid/upload/Financing-the-Medicaid-Program-The-Many-Roles-of-Federal-and-State-Matching-Funds-Policy-Brief.pdf. Accessed January 3, 2011.

[24] "Medicaid: Good Medicine for State Economies". Families USA. January 2003. http://www.familiesusa.org/assets/pdfs/Good_Medicine_2004_update93b7.pdf. Accessed January 3, 2011.

[25] Vernon K. Smith, et al. "Hoping for Economic Recovery, Preparing for Health Reform: A Look at Medicaid Spending, Coverage and Policy Trends -- Results from a 50-State Medicaid Budget Survey for State Fiscal Years 2010 and 2011". Kaiser Family Foundation. September 2010. http://www.kff.org/medicaid/upload/8105.pdf. Accessed January 3, 2011.

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For 2011, the adopted growth rate for Medicaid is expected to be 7.4 percent, a decrease from the prior year.[26]. The largest factor driving spending growth remains increasing enrollment. Figure 7 from the Kaiser Commission shows the relationship between spending and enrollment growth since 1998. The two periods with high Medicaid spending and enrollment reflect the weak economic situation at those respective points.[27]

FIGURE 7 – PERCENT CHANGE IN TOTAL MEDICAID SPENDING AND ENROLLMENT, KAISER COMMISSION ON STATE MEDICAID, FY 1998 - FY 2011
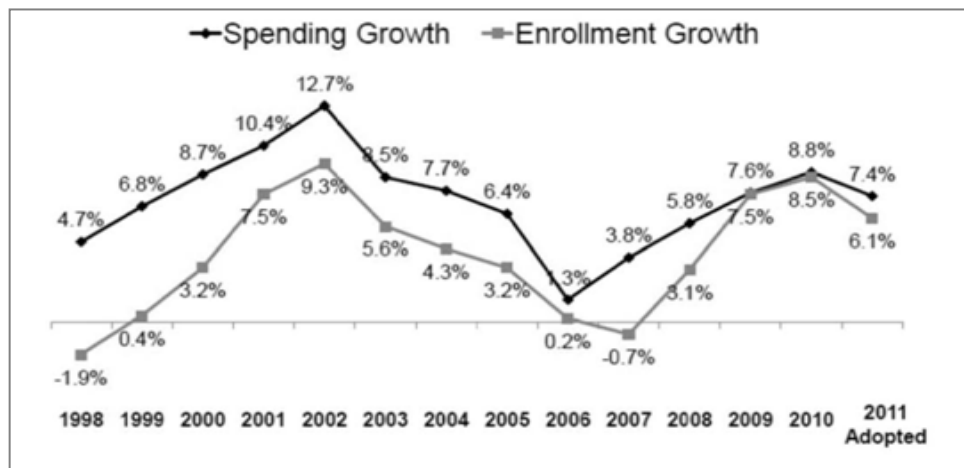
Note: Enrollment percentage changes from June to June of each year. Spending growth percentages in state fiscal year.

Source: Enrollment Data for 1998-2009: *Medicaid Enrollment in 50 States,* KCMU. Spending Data from KCMU Analysis of CMS Form 64 Data for Historic Medicaid Growth Rates. FY 2010 and FY 2011 data based on KCMU survey of Medicaid officials in 50 states and DC conducted by Health Management Associates, September 2010.

Chapter 6 in this report looks at the Appalachian states' burden for Medicaid coverage and how that would change under ACA requirements.

1.3   INDEX CONSTRUCTION

To benchmark success of reform and impact on the Appalachian Region, ARC solicited a research study to develop an index to show healthcare access and cost disparities in the region, and to present an overview of the economic challenges and opportunities represented by healthcare expenditures.

This study examines whether the lack of access to medical care is a greater problem in Appalachia, than in the rest of the United States, not only in the way of fewer medical professionals and hospitals, but also reflected in lower rates of health insurance coverage, lower labor force participation rates, a higher proportion of low-wage and part-time jobs, and higher rates of unemployment and underemployment. Alone or together, these factors might reduce access to healthcare.

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[26] Ibid. p. 6.
[27] Ibid. p. 6.

As mandated by Congress to assure that ARC investments are targeted to the communities most in need, ARC publishes the ARC Distressed County Index annually. Based on the ARC economic status index, the Distressed County Index is prepared from national data and includes three measures of economic health: unemployment, per capita market income and poverty rate. All of these data are available at the county level and are published by federal sources. For inter-census population data, ARC uses Census estimates.

In this report, PDA and UNC Sheps Center developed an ARC healthcare cost / access index in a manner similar to the ARC Distressed County Index and measured correlations between the two. Scalability, uniformity of definition and longitudinal availability are important aspects of a good index. This report has concentrated on building the index from databases that are available to the general public at reasonable cost. ARC sets policy and allocates resources at the county level. Working within this context, this report also focuses on measures that are available, consistent and reliable at the county level.

Adequate access to healthcare requires the ability to gain entry into the system, gain access to sites of care, and find providers who can meet the needs of patients.[28] Successful accomplishment of such activities presumes that an adequate number and type of health providers are geographically accessible to a potential patient base, and that some form of health insurance coverage or other payment mechanism exists to enhance the probability that an appropriate transaction actually take place. The proposed healthcare cost / access index measures all of these.

1.4   EXISTING MEASURES OF HEALTHCARE ACCESS AND DISPARITIES

1.4.1   HEALTHCARE DISPARITIES SCORECARDS

A quantitative source of information on health related disparities comes from summary measures of health resources which have been constructed by several national health policy groups for purposes of uniformly comparing state-level information. Three state-based health scorecards in particular, i.e., State Health Access Data Assistance Center (SHADAC), America's Health Rankings, and the Commonwealth Fund State Scorecard, measure health insurance access through the insurance component of the Medical Expenditure Panel Survey. These reports provide estimates at a state or metropolitan level only and are not estimated at a county-level. However, two county-based health scorecards, i.e., the County Health Rankings and the Center for Disease Control's (CDC) annually published Community Health Status Indicator (CHSI)[29] use the Small Area Health Insurance Estimates (SAHIE) to obtain insured and uninsured numbers at the county-level. These estimates are constructed to cover only people who are below the ages of 64 and would not be eligible for Medicare. These county-level estimates are also available on the Health Resource and Service Administration (HRSA's) Area Resource File (ARF). See Appendix H for a sample county.

Health outcome disparities in Appalachia are only partially consistent with conventional wisdom regarding the supply of health resources. Not surprisingly, the earlier report, *An Analysis of the Financial Conditions of Health Care Institutions in the Appalachian Region and their Economic Impacts* describes provider supply as more concentrated in higher income areas, with correspondingly more pronounced shortages in rural areas.[30]

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[28] National Healthcare Disparities Report, 2010. Chapter 9. Access to Health Care Agency for Healthcare Research and Quality. Rockville, MD. http://www.ahrq.gov/qual/nhdr10/Chap9.htm

[29] "Community Health Status Indicators (CHSI) Report". U.S. Department of Health and Human Services. 2009. http://www.communityhealth.hhs.gov/. Accessed January 3, 2011.

[30] Jeffrey Stensland, Curt Mueller and Janet Sutton. "An Analysis of the Financial Conditions of Health Care Institutions in the Appalachian Region and their Economic Impacts". Appalachian Regional Commission. December 2002.

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The analysis shows that certain services including home health, mental health, and drug/alcohol treatment are less available in rural areas.
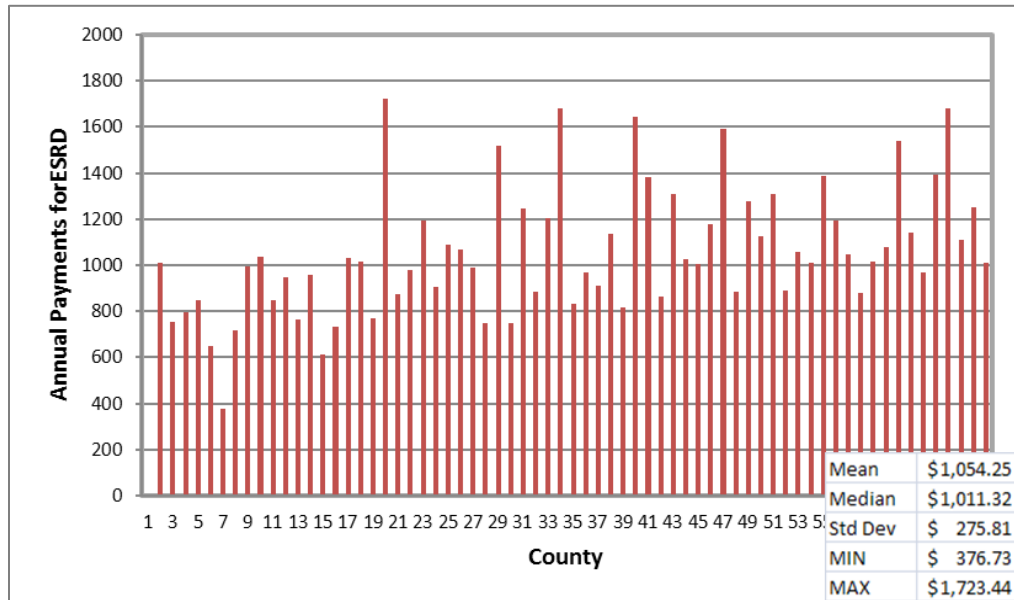
All of the previously described scorecards have also measured the supply of health professionals using a simple per capita calculation as the basis for comparison. These scorecards predominantly use the number of primary care physician per 100,000 population as a means of calculating access to supply because the measure repeatedly tests well as a good index of appropriate access. The number of dentists per 100,000 population was also included in the CHSI scorecard. Dental care is directly related to positive health status. None of the state- or county-based scorecards have examined the extent of geographic variation in the distribution of more specialized medical resources.

Finally, although synthetic estimates produced from the CDC's Behavioral Risk Factor Surveillance System (BRFSS) data, could be, and have been, constructed and might yield interesting and valuable information, doing so would require extensive statistical modeling that is clearly beyond the scope of this project. A review of the various scorecard documentation sources and other quantitative literature revealed that relatively few quantitative indicators can be obtained at the county-level. Many prior studies used survey based measures obtained from BRFSS-based questions. Such items describe health risks or health behaviors or involve reports of actual experiences of patients and potential healthcare consumers about their own access and cost barriers. Unfortunately, as useful as such data might be for assessing barriers to care, BFRSS samples are typically designed to yield valid and reliable estimates only at state or national levels. As a consequence, the sample sizes are so small that direct estimates cannot be made at most sub-state levels, particularly at the level of a typical rural county. Further, because the content of BRFSS questions frequently changes over time, future comparability of estimates generated from BRFSS questions cannot be guaranteed. To address the rural county issue, we recommend that ARC request CDC and BRFSS staff to oversample surveys in the rural areas of the nation.

National county-level healthcare expenditure data are not available on a timely basis. The Centers for Medicare and Medicaid Services (CMS) maintain files on Medicare expenditures per capita at the county level. Medicare has three programs: Old Age, Disabled and End State Renal Disease.

Each has a skew that makes it less than fully representative of the population as a whole. Renal disease coverage is the only truly national health insurance program in the U.S. and services can be well distributed even at very rural levels. These data could be normalized to a national per capita average in construction of an index. Figure 8 shows, as an example, the wide county-to-county variation in one state, Alabama. In Figure 9, the average Alabama Appalachian county spends more Medicare dollars than the average state county, $1,117 compared to $1,054. Unfortunately, by the time the CMS data are aggregated for public use, they are many years old. Data in Figures 8 and 9 are the most currently available in 2011, and those data are for the Year 2003.

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FIGURE 8 – TOTAL PER CAPITA MEDICARE ESRD PAYMENTS, WHOLE STATE ALABAMA (2003)

Mean	$1,054.25
Median	$1,011.32
Std Dev	$ 275.81
MIN	$ 376.73
MAX	$1,723.44

Source: CMS ESRD 2003 Total Part A Per Capita by State and County

FIGURE 9 – TOTAL PER CAPITA ESRD PAYMENTS APPALACHIAN COUNTIES, ALABAMA (2003)

Mean	$ 1,117.42
Median	$ 1,052.09
Std Dev	$ 290.42
MIN	$ 613.78
MAX	$ 1,723.44
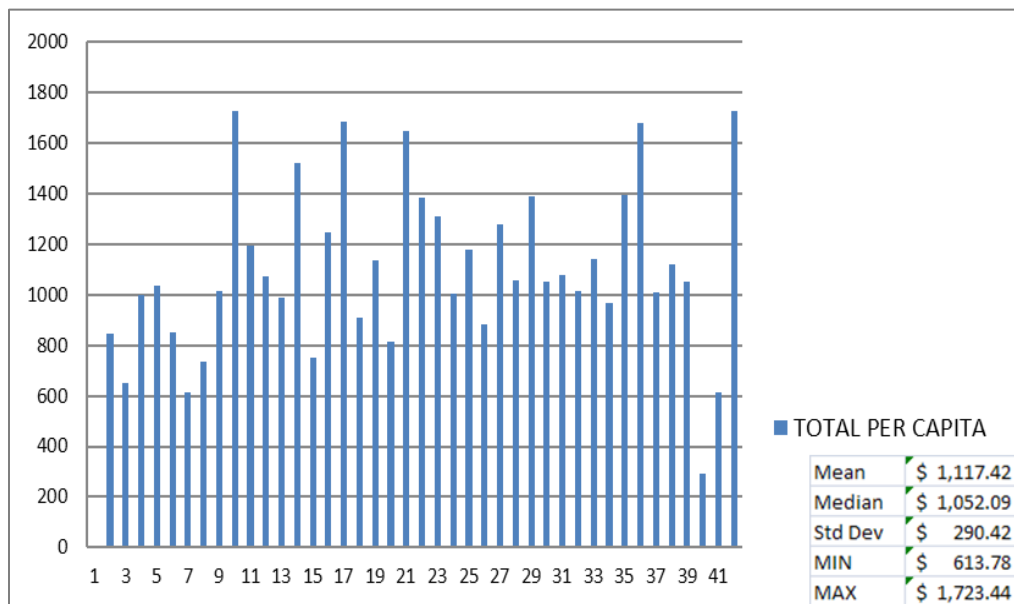
Source: CMS ESRD 2003 Total Part A Per Capita by State and County

Generally, expenditure data have several built in issues. They include utilization patterns and allowable charge structures, as well as the availability of services. Utilization may also reflect practice patterns of providers, rather than specific care requirements of the population served.

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The Dartmouth Atlas Working Group of the Dartmouth Institute for Health Care Policy and Clinical Practice have extensively documented variations in Medicare utilization by hospital referral regions, hospital service areas and primary care service areas, across the United States.[31] Their results are drawn from the five percent sample of Medicare data made available for public research. Because their research reflects the behavior of only people who are over 65, disabled or have end stage renal disease, their conclusions about patterns of use must be extended with caution to other parts of the population.

Chapter 4 of this report demonstrates that the patterns are not the result of high unit payments. Lead researcher for the Dartmouth Atlas project, Elliot Fisher, has noted that utilization may be proportional to physician practice patterns including physician expectations of number of times he or she will see a patient for the same condition. He has also observed that this varies by geography. [32] He further notes that 30 percent of unnecessary health spending is supply sensitive; more supply generating more unnecessary spending.

Appendix K details measures of access, insurance and health cost that were explored in the course of preparing this report. Key measures are reviewed in the following sections.

1.4.2 HEALTH COST MEASURES

National data on healthcare cost (largely measured in payments for services) are collected uniformly for only Medicare and Veterans Administration beneficiaries. Medicare data, primarily concerning persons over 65, are maintained at the county level by the Centers for Medicare and Medicaid Services (CMS).

Data for Medicaid, a state-federal program for low-income dependent children and their mothers, elderly, blind and disabled persons are collected by CMS but only for a few states.[33] Two private entities, the Kaiser Family Foundation and the UNC Sheps Center, Rural Health Resource Center maintain payment and utilization data on all states.

Insurance payment data for persons under age 65 and not on Medicaid are less uniform, because claims are paid by multiple private entities that guard their proprietary databases. A few companies like Milliman and Mercer receive these data in return for providing actuarial forecasts to the insurance industry. Even Medicare claims data take years to assemble. In 2010, the most current data on payments are from the year 2007. However, because many reimbursement programs are based on Medicare's payment schedule and expressed as a multiple of Medicare, Medicare has been considered a relatively good proxy for payment by others. A recent comparison of Dartmouth Atlas Medicare data with claims data from private insurers, suggests that the parallels may not be as strong as once thought.[34]

Medicare also employs a Geographic Wage Index to adjust its national base payment to the local economy. The wage index is assembled from cost reports filed by entities that receive facility fees from Medicare and is organized by the Office of Management and Budget Core-Based Statistical Areas (CBSAs) boundaries for metropolitan, micropolitan, and other non-core geographic designations within each state. Counties are assigned to areas and indices are established for each. Recently, a new Index, the Frontier Index was introduced to override the Geographic Wage Index and give very rural counties an index of at least 1.0. The

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[31] The Dartmouth Atlas of Health Care http://www.dartmouthatlas.org/data/region/.

[32] Fisher, Elliot. Keynote Presentation. Meeting of Patient Centered Primary Care Collaborative. March 30, 2011. Washington, D.C.

[33] "Medicaid Data Sources, Medicaid Analytic Extract (MAX) General Information". Centers for Medicare and Medicaid Services. December 2010. https://www.cms.gov/MedicaidDataSourcesGenInfo/07_MAXGeneral Information.asp.

[34] Ginsburg, Paul, Wide Variation in Hospital and Physician Payment Rates Evidence of Provider Market Power. Center for Studying Health System Change. Research Brief No. 16. November 2010.

Frontier index heavily favors states like Minnesota, South Dakota and North Dakota. No Appalachian counties qualify for his population density based status. Other than the Medicare Geographic Wage Index, no uniform national measures of cost to provide services exist. See Appendix A for the Year 2010 Medicare Hospital Geographic Wage Index.

1.4.3 INSURANCE COVERAGE MEASURES

Medical access can be measured in resource availability and in number of persons who have insurance coverage to pay for resource use. Data on insurance coverage including all private insurance and Medicare/Medicaid coverage for persons over 65 are collected uniformly at the county level. Individual data elements lag the calendar year by two to five years. These are maintained in the Area Resource File (ARF) by the U.S. Department of Health and Human Services / Health Resources and Services Administration (HRSA). HRSA charges an annual fee of $50 for use of the files, which takes a significant amount of time to assemble.

UNC Sheps center acquires the HRSA files annually and assembles them into usable files. Most recent data in the file are from 2008. Insurance coverage data are drawn from long form Census Population Studies (CPS). These sample data are synthetically manipulated to get county-level estimates. The most recent of these insurance coverage data are for the year 2006. They are also included in the ARF.

Any estimates of insurance coverage must be treated as point in time snapshots, because health insurance coverage changes quickly. Private insurance coverage changes month to month. Medicaid eligibility can change in 30 days. Even Veterans Affairs (VA) and Department of Defense TRICARE coverage provided to military and dependents have limited durations of coverage. Only Medicare Part A is stable, because that federal program covers individuals continuously from age 65 on, without charge. Any other measure of insurance coverage has built-in error.

Anticipating that the Health Insurance Exchanges mandated by the health reform act will require more uniform information on health insurance coverage, The Robert Woods Johnson Foundation is sponsoring an initiative to assemble an All-Payer Claims Database. The foundation offers a website with information on what is available in each state.[35] In fall 2010, the initiative is in start-up mode and shows the inconsistency of data availability for non-Medicare expenditures across states. Until this database matures, or Health Insurance Exchanges become a reality, there will be no standardized measures of total healthcare coverage across states. Every index will be based on a proxy measure.

1.4.4 HEALTHCARE RESOURCE MEASURES

Measures of access to healthcare resources are typically calculated on a per capita basis. The resource measured (e.g., primary care physicians, beds, etc.) is the numerator, and the denominator is the population size for the region measured. Beds per 1,000 population is one such measurement of access with the nationwide average of 2.7 hospital beds per 1,000 population in 2008.[36.] This is a decrease from prior years with the ratio steadily declining from 3.0 beds per population in 1999. In 2008, Mississippi had the highest number of beds with 4.5 per 1,000 population, while Maryland had the lowest ratio at 2.1, among the Appalachian states. As the nation shifts from inpatient-based care to outpatient, hospitals are de-emphasizing beds. However, no comparable measure of outpatient capacity has emerged.

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[35] http://www.statecoverage.org.
[36] Kaiser Family Foundation. "Beds per 1,000 Population, 2008". March 2010.
http://www.statehealthfacts.org/comparemaptable.jsp?ind=384&cat=8. Accessed January 3, 2011.

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An additional resource access measure is the number of physicians or dentists per 1,000 population.[37] The nationwide average of primary care physicians per 1,000 population was 1.4 in 2009. Among the Appalachian states, Mississippi had the lowest ratio of 0.9, while New York had the highest rate at 1.8 per 1,000 population. Among dentists, the ratio per 1,000 population was 0.8 nationwide in 2009.[38]

The ARF also contains county-level data for healthcare facilities (hospitals, nursing homes and clinics), and for healthcare professionals (specialty and non-specialty physicians and physician assistants, Osteopaths and dentists). Counts of nurses are available from ARF, but the most current estimates of nurse supply are from the year 2000.

Appalachian counties are tagged in this ESRI-based database. Data in the Sheps Center database have also been used in North Carolina for more than 35 years in the identification of underserved communities, for the purpose of targeting medical and mental health investments. The Sheps index of under-service is updated annually. This index is based on actual service use compared to expected use by a middle income household. Please see Appendix B for a national map of the index. Elements of the index can function as a foundation for reflecting the intensity of cost and facility access at the county level, because it can accept other county-level variables.

CMS has a file called OSCAR, for Online Survey, Certification and Reporting, that contains addresses of every provider certified to bill Medicare. The OSCAR file includes all hospitals and healthcare facilities that participate in Medicare.

VA has begun to code the locations and service areas of all of its hospitals and satellite facilities. These are catalogued at the county level, and maintained in the VA's extensive national VISTA medical record system and VA AMMS billing system. Data are assembled by the VA Health Economic Research Center and maintained on a website.[39]

1.4.5 HEALTH STATUS MEASURES

Traditional measures of health status focus on a single issue like infant mortality, death rates overall or associated with a particular disease. Recent attention to the nation's chronic problem with obesity and the high cost of care for persons with diabetes has called attention to these two measures. In healthcare, there is no equivalent of the Gross Domestic Product. Many health researchers rely on variations of the measure, Years of Potential Life Lost (YPLL).

During the course of this study, the National Institute of Medicine, in cooperation with the Robert Wood Johnson Foundation, has convened a Committee to develop a Health Adjusted Life Expectancy index to track trends, mark progress and encapsulate an overall picture of health of communities and of the nation. This committee should file three reports by the end of calendar year 2011. Already, the committee has recommended restructuring of the National Center for Health Statistics, which is the repository of the nation's data on disease and health service utilization.[40]

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[37] Kaiser Family Foundation, "Nonfederal Primary Care Physicians per 1,000 Population, 2009". December 2009. http://www.statehealthfacts.org /comparemaptable.jsp?ind=690&cat=8. Accessed January 3, 2011.
[38] Kaiser Family Foundation, "Dentists per 1,000 Population, 2009". December 2009. http://www.statehealthfacts.org/comparemaptable.jsp?ind=691&cat=8. Accessed January 3, 2011.
[39] VA Health Economic Resource Center. www.herc.research.med.va.gov.
[40] "The Role of Measurement in Action and Accountability Report". Institute of Medicine for the Public's Health. Brief 10. December 2010.

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1.5 STRUCTURE OF THE REPORT

This report is organized into eight chapters followed by appendices. Following this Introduction, Chapter 2 discusses the elements of the proposed index of healthcare cost and access. Chapter 3 describes how Appalachian counties compare in the region and with the United States on the index and its three components: healthcare cost, health insurance coverage, and healthcare resources. Chapter 4 explores how the index correlates with economic distress and persistent poverty. Chapter 5 addresses ARC policy issues raised by the index. Chapter 6 addresses best practices in providing health insurance and describes the impact of ACA health reform on Appalachian state Medicaid programs. Chapter 7 provides a summary of the report. And, Chapter 8 provides a bibliography of references used. Appendices provide supporting materials. Specifically, Appendices K through M provide details of the HCCA structure and the statistical tests of its relationships.

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