



Axene Health Partners, LLC

Health Actuaries & Consultants

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Affordability... A Crucial Focal Point in the Health Care Debate

Updated 11/19/2004

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Axene Health Partners, LLC

Overview

For more than two decades, the US health care system has attracted considerable attention, both by the media and by public policymakers, as health care costs continue to rise and the uninsured population continues to grow. Rapidly increasing costs and their adverse effect on premium rates and health plan profitability continue to fuel concerns about the future of the US health care system and our collective ability to pay for health care. This document takes a fresh look at the affordability of health care and offers several new insights. This particular report presents updated results of an original document first released in 2002.

AHP Health Care Affordability Index™ (HCAI™)

Much of today's health care focus centers on the rising costs of health care. Today's challenging economic situation since 9/11 and the heightened concerns about terrorism, the financial impact of the recent recession and the fallout from the decline of the "dot com" and telecom market booms, and the overall lack of confidence in the post-Enron economy has redirected much of the health care discussion to affordability, not simply health care costs.

Affordability can best be defined as a measure of someone's or something's ability to purchase a good or a service. It describes whether a person or organization, with limited resources, is able to make a purchase without unacceptable or unreasonable sacrifices. Similarly, health care affordability describes whether a person or organization has sufficient income to pay for or provide for health care costs.

The AHP HCAI measures the relative affordability of health care for individuals, organizations, and the government by comparing both health care costs and income. The ratio of cost to income provides a valuable metric of affordability. Once normalized to an average or standard affordability level (i.e., 1.00 or 100%), it is possible to compare one region with another, one sector to another, one stakeholder to another, etc.

To reflect all health care stakeholders, the AHP HCAI reflects an average of health care affordability for each of the three key health care purchasers – employers, employees, and government entities. Each component of the HCAI can be reviewed individually to measure affordability for each stakeholder.

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The definitions and formulas used to determine each of the individual affordability components are as follows:

- **Employer Affordability Index**: The employer index is based upon the ratio of employer cost to employer income. Cost is defined as the health insurance premiums paid by the employer. We have relied upon information obtained from the Agency for Healthcare Research and Quality, Center for Cost and Financing Studies: (www.meps.ahrq.gov/MEPSDATA/ic/2002/Index202.htm). Definitions and descriptions of the methods used for this survey can be found in the Technical Appendix: (<http://www.meps.ahrq.gov/MEPSDATA/ic/2002/techappendix.htm>). MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for. MEPS also includes data on the cost, scope, and breadth of private health insurance held by and available to the U.S. population. Data is generally updated in July or August showing results from two years previous (i.e. 2002 was added 7/24/04). Not all states are included every year, so previous year data is used to fill in the missing states. Summarized versions of this information can also be found on the Kaiser Family Foundation website, www.statehealthfacts.kff.org in the Health Costs & Budgets category.

Income is defined as corporate revenue per employee. We have used the Gross State Product (GSP), a measure of all economic productivity in each state, as a proxy for employer revenue. While pre-tax corporate income might also be a useful measure of income, a direct measure of pre-tax corporate income by state is problematic due to the presence of large, multi-state employers, which do not report pre-tax income by state on a consistent, accessible basis. Because GSP is not available at the MSA level, a formula of GSP divided by the number of employees would be the measure for income used for a given geographic region. State Health Facts Online, which is put together by the Kaiser Family Foundation, has health information for US at different levels of detail. (www.statehealthfacts.org) State Health Facts Online summarizes the latest state-level data on demographics, health, and health policy, including health coverage, access, financing, and state legislation. The Census bureau, www.bea.doc.gov, provides data on Gross State Product.

The formula for the employer affordability factor is:

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$$\text{Employer Affordability Factor} = \frac{\text{Employer health expenses}}{\text{Gross State Product for region}}$$

Our index is derived through a normalization method. We calculate the US average and then determine the ratio of each state to the US average.

Table 1 shows the Employer Affordability Index by State. All 50 states are represented in this analysis, with a few of them based upon older data due to missing information in the updated public data. Many of the states with the highest indices are states with a significant concentration of industries with union negotiated benefit programs, potentially with higher than average employer contribution rates.

State	Employer	State	Employer
U.S. Total	1.00	New Mexico	0.58
Alabama	0.95	Alaska ('01)	0.59
Alaska ('01)	0.59	Wyoming	0.66
Arizona	0.86	Idaho ('01)	0.68
Arkansas ('01)	1.00	Virginia	0.75
California	0.78	California	0.78
Colorado	1.08	Louisiana	0.80
Connecticut	0.97	New York	0.82
Delaware	0.93	Georgia	0.86
Florida	1.10	Arizona	0.86
Georgia	0.86	Montana	0.89
Hawaii	0.98	South Dakota ('00)	0.89
Idaho ('01)	0.68	Oklahoma	0.90
Illinois	1.16	North Dakota ('00)	0.91
Indiana	1.31	Maryland	0.92
Iowa	1.18	Delaware	0.93
Kansas	1.06	Rhode Island ('01)	0.94
Kentucky	1.25	Alabama	0.95
Louisiana	0.80	Connecticut	0.97
Maine	1.06	South Carolina	0.97
Maryland	0.92	Washington	0.97
Massachusetts	0.99	Texas	0.97
Michigan	1.22	Oregon	0.98
Minnesota	1.15	Hawaii	0.98
Mississippi	1.00	Tennessee	0.98
Missouri	1.04	Massachusetts	0.99
Montana	0.89	New Hampshire	0.99
Nebraska	1.11	Mississippi	1.00

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Table 1			
Employer Affordability Index (2002)			
State	Employer	State	Employer
Nevada	1.03	Arkansas ('01)	1.00
New Hampshire	0.99	U.S. Total	1.00
New Jersey	1.08	Vermont ('01)	1.02
New Mexico	0.58	Nevada	1.03
New York	0.82	Missouri	1.04
North Carolina	1.11	Kansas	1.06
North Dakota ('00)	0.91	Maine	1.06
Ohio	1.17	Colorado	1.08
Oklahoma	0.90	New Jersey	1.08
Oregon	0.98	Florida	1.10
Pennsylvania	1.31	Nebraska	1.11
Rhode Island ('01)	0.94	North Carolina	1.11
South Carolina	0.97	Minnesota	1.15
South Dakota ('00)	0.89	Illinois	1.16
Tennessee	0.98	Ohio	1.17
Texas	0.97	Iowa	1.18
Utah	1.27	West Virginia	1.19
Vermont ('01)	1.02	Michigan	1.22
Virginia	0.75	Kentucky	1.25
West Virginia	1.19	Utah	1.27
Washington	0.97	Pennsylvania	1.31
Wisconsin	1.48	Indiana	1.31
Wyoming	0.66	Wisconsin	1.48

- **Employee Affordability Index:** The employee index is similarly calculated based upon a ratio of employee health care cost to overall employee income. The employee share of health cost has been defined as the employee share of health insurance premiums or health benefit contributions. Although accurate measures of these components are not available on a state-by-state basis, employees also bear the cost of two additional health care components:
 - Employee responsibilities for deductibles, coinsurance, and copays
 - Employee out-of-pocket purchases of non-covered health care costs

The primary source of employee paid health care costs is information from the Agency for Healthcare Research and Quality, Center for Cost and Finance Studies (www.meps.ahrq.gov). U.S. Census Bureau Historical Health Insurance Tables were also used in formulating the index. Table HI-4: Health Insurance Coverage Status and Type of

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Coverage by State - All Persons: 1987 to 2003.
 (www.census.gov/hhes/hlthins/historic/hihist4.html).

Employee income is defined as the average household income in a given geographic region. The sources used to determine income include the U.S. Census Bureau and were accessed from the U.S. Statistical Abstract, www.statehealthfacts.kff.org, and a variety of other websites that provide a compilation of income data. The formula for the employee affordability factor is:

$$\text{Employee Affordability Factor} = \frac{\text{Employee medical expenses}}{\text{Employee Income}}$$

The Employee Affordability Index is calculated from the Employee Affordability Factors using the same methodology as the Employer Index. Once again, some states did not have the most recent data, so older data was used in order to fill the holes.

The results of our analysis are in Table 2. Our analysis shows that the least affordable states for employees are in the Southeastern and Midwestern US, with a few New England states. Lower personal income levels are the biggest contributor to the lack of affordability.

We did find occurrences where states showed relatively unaffordable healthcare for employers but affordable healthcare for employees. The state of Michigan is an example of this. We believe the strong labor union presence in these states is one of the driving causes of this.

Table 2
Employee Affordability Index (2002)

State	Employee	State	Employee
U.S. Total	1.00	Hawaii	0.73
Alabama	1.21	Washington	0.76
Alaska ('01)	0.87	Connecticut	0.76
Arizona	1.04	California	0.82
Arkansas ('01)	1.24	New Jersey	0.84
California	0.82	Nevada	0.86
Colorado	0.96	New York	0.86
Connecticut	0.76	Maryland / DC	0.86
Delaware	0.97	Alaska ('01)	0.87
Florida	1.05	Michigan	0.90
Georgia	1.13	Oregon	0.91
Hawaii	0.73	Massachusetts	0.93
Idaho ('01)	1.07	Pennsylvania	0.96
Illinois	0.98	Colorado	0.96
Indiana	1.07	Delaware	0.97

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Table 2			
Employee Affordability Index (2002)			
State	Employee	State	Employee
Iowa	1.21	Illinois	0.98
Kansas	1.12	Wyoming	0.99
Kentucky	1.17	U.S. Total	1.00
Louisiana	1.24	Rhode Island ('01)	1.02
Maine	1.36	Virginia	1.04
Maryland / DC	0.86	Arizona	1.04
Massachusetts	0.93	Florida	1.05
Michigan	0.90	New Mexico	1.06
Minnesota	1.14	Montana	1.07
Mississippi	1.21	Idaho ('01)	1.07
Missouri	1.11	Indiana	1.07
Montana	1.07	Ohio	1.08
Nebraska	1.26	New Hampshire	1.09
Nevada	0.86	Missouri	1.11
New Hampshire	1.09	Wisconsin	1.12
New Jersey	0.84	Kansas	1.12
New Mexico	1.06	Texas	1.12
New York	0.86	Georgia	1.13
North Carolina	1.80	Minnesota	1.14
North Dakota ('00)	1.21	West Virginia	1.15
Ohio	1.08	Kentucky	1.17
Oklahoma	1.31	Tennessee	1.18
Oregon	0.91	Utah	1.19
Pennsylvania	0.96	South Carolina	1.19
Rhode Island ('01)	1.02	Vermont ('01)	1.20
South Carolina	1.19	North Dakota ('00)	1.21
South Dakota ('00)	1.30	Alabama	1.21
Tennessee	1.18	Mississippi	1.21
Texas	1.12	Iowa	1.21
Utah	1.19	Louisiana	1.24
Vermont ('01)	1.20	Arkansas ('01)	1.24
Virginia	1.04	Nebraska	1.26
Washington	0.76	South Dakota ('00)	1.30
West Virginia	1.15	Oklahoma	1.31
Wisconsin	1.12	Maine	1.36
Wyoming	0.99	North Carolina	1.80

- **Private Payer Affordability Index:** In addition to the overall combined affordability index, we calculated a private payer index which is a simple average of the employer and employee factors:

$$\text{Private Payer Affordability Index} = \frac{(\text{Employer} + \text{Employee})}{2}$$

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The Private Payer Affordability Index is shown in Table 3.

Table 3			
Private Payer Affordability Index (2002)			
State	Private Payer	State	Private Payer
U.S. Total	1.00	Alaska ('01)	0.73
Alabama	1.08	California	0.80
Alaska ('01)	0.73	New Mexico	0.82
Arizona	0.95	Wyoming	0.83
Arkansas ('01)	1.12	New York	0.84
California	0.80	Hawaii	0.85
Colorado	1.02	Connecticut	0.86
Connecticut	0.86	Idaho ('01)	0.87
Delaware	0.95	Maryland / DC	0.89
Florida	1.07	Virginia	0.90
Georgia	0.99	Oregon	0.94
Hawaii	0.85	Nevada	0.94
Idaho ('01)	0.87	Delaware	0.95
Illinois	1.07	Arizona	0.95
Indiana	1.19	New Jersey	0.96
Iowa	1.20	Massachusetts	0.96
Kansas	1.09	Washington	0.97
Kentucky	1.21	Montana	0.98
Louisiana	1.02	Rhode Island ('01)	0.98
Maine	1.21	Georgia	0.99
Maryland / DC	0.89	U.S. Total	1.00
Massachusetts	0.96	Louisiana	1.02
Michigan	1.06	Colorado	1.02
Minnesota	1.15	New Hampshire	1.04
Mississippi	1.10	Texas	1.05
Missouri	1.07	North Dakota ('00)	1.06
Montana	0.98	Michigan	1.06
Nebraska	1.19	West Virginia	1.06
Nevada	0.94	Florida	1.07
New Hampshire	1.04	Missouri	1.07
New Jersey	0.96	Illinois	1.07
New Mexico	0.82	Alabama	1.08
New York	0.84	South Carolina	1.08
North Carolina	1.46	Tennessee	1.08
North Dakota ('00)	1.06	Kansas	1.09
Ohio	1.13	South Dakota ('00)	1.10
Oklahoma	1.10	Oklahoma	1.10
Oregon	0.94	Mississippi	1.10
Pennsylvania	1.13	Vermont ('01)	1.11
Rhode Island ('01)	0.98	Arkansas ('01)	1.12
South Carolina	1.08	Ohio	1.13

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State	Private Payer	State	Private Payer
South Dakota ('00)	1.10	Pennsylvania	1.13
Tennessee	1.08	Minnesota	1.15
Texas	1.05	Nebraska	1.19
Utah	1.23	Indiana	1.19
Vermont ('01)	1.11	Iowa	1.20
Virginia	0.90	Kentucky	1.21
Washington	0.97	Maine	1.21
West Virginia	1.06	Utah	1.23
Wisconsin	1.30	Wisconsin	1.30
Wyoming	0.83	North Carolina	1.46

- **Government Affordability Index:** As with the other indices, we calculated the Government Affordability Index as the ratio of government health care cost to government income. Government health care cost is the total expense for various public health programs including:
 - Medicare expenditures – a Federal program
 - Medicaid expenditures – a Federal/State program
 - SCHIP programs – State programs for “uninsurable” individuals

The primary source of information for Medicare, Medicaid, and SCHIP expenditures is <http://www.statehealthfacts.org>. The State Health Facts website, produced by the Kaiser Family Foundation, shows state specific spending and enrollment along with other detailed information about each individual state. The most recent information that we used included 2002 Medicaid and SCHIP, along with 2001 Medicare spending. The Medicaid numbers (2002) were trended forward so that they would more appropriately align with the 2003 governmental revenue numbers that were used. Additional information used to cross-reference numbers was available through: US Department of Health and Human Services, www.hcfa.gov, www.medicare.gov, and the Congressional Budget Office.

Government income is the total of federal and state tax revenue plus premiums received from those enrolled under Medicare Part B. The primary source of information for federal/state tax revenue is the US Census Bureau (<http://www.census.gov/govs/statetax/03staxrank.html>) and the US Internal Revenue Service (<http://www.irs.gov/pub/irs-soi/03db06co.xls>).

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The premium received for Medicare Part B was calculated by taking the Part B enrollment by state and multiplying it by the Part B premium rates. The Part B enrollment was found on the CMS website (<http://www.cms.hhs.gov/statistics/enrollment/sage/sageall03.pdf>) while the premium rates were found on the Trustees Report which is also available on the CMS website. (<http://www.cms.hhs.gov/publications/trusteesreport/2004/tabii6.asp>)

$$\text{Government Affordability Factor} = \frac{\text{Government Medical Expenditures}}{\text{Government Tax Revenues}}$$

The results of our analysis are in Table 4.

The government index is highly affected by the average tax revenues received in each state. As a result, the Southeastern states appear less affordable. In examining average tax revenue, it can be shown that these states are the lowest in terms of per capita revenue.

Our index does not currently allocate statewide government subsidies back to the states that provide the subsidy dollars. Those dollars show up in the state that receives the subsidy. This accounts for some of the wide variability in affordability in the government index.

State	Government	State	Government
U.S. Total	1.00	Delaware	0.48
Alabama	1.53	Minnesota	0.54
Alaska	1.07	Nevada	0.62
Arizona	1.12	Colorado	0.64
Arkansas	0.95	Wyoming	0.65
California	0.87	Virginia	0.66
Colorado	0.64	Illinois	0.69
Connecticut	0.71	Connecticut	0.71
Delaware	0.48	New Jersey	0.72
Florida	1.36	Utah	0.72
Georgia	0.78	Maryland & DC	0.76
Hawaii	0.80	Georgia	0.78
Idaho	0.87	Hawaii	0.80
Illinois	0.69	Washington	0.80
Indiana	1.07	Nebraska	0.83
Iowa	1.08	Michigan	0.85
Kansas	0.99	California	0.87
Kentucky	1.53	Idaho	0.87

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Table 4			
Government Programs: Medicare and Medicaid			
State	Government	State	Government
Louisiana	1.84	Oklahoma	0.90
Maine	1.47	Wisconsin	0.90
Maryland & DC	0.76	Texas	0.91
Massachusetts	0.98	Arkansas	0.95
Michigan	0.85	New Hampshire	0.97
Minnesota	0.54	Massachusetts	0.98
Mississippi	1.84	Kansas	0.99
Missouri	1.15	Ohio	0.99
Montana	1.22	U.S. Total	1.00
Nebraska	0.83	Rhode Island	1.06
Nevada	0.62	Alaska	1.07
New Hampshire	0.97	Indiana	1.07
New Jersey	0.72	Iowa	1.08
New Mexico	1.34	Oregon	1.08
New York	1.42	North Carolina	1.10
North Carolina	1.10	North Dakota	1.10
North Dakota	1.10	Arizona	1.12
Ohio	0.99	Missouri	1.15
Oklahoma	0.90	Vermont	1.15
Oregon	1.08	Montana	1.22
Pennsylvania	1.34	South Dakota	1.26
Rhode Island	1.06	New Mexico	1.34
South Carolina	1.63	Pennsylvania	1.34
South Dakota	1.26	Tennessee	1.34
Tennessee	1.34	Florida	1.36
Texas	0.91	New York	1.42
Utah	0.72	Maine	1.47
Vermont	1.15	Alabama	1.53
Virginia	0.66	Kentucky	1.53
Washington	0.80	South Carolina	1.63
West Virginia	1.99	Louisiana	1.84
Wisconsin	0.90	Mississippi	1.84
Wyoming	0.65	West Virginia	1.99

- **Combined Affordability Index:** After we calculated each of the above three affordability indices, we developed a combined affordability index using a simple average of the three indices. The formula used is:

$$\text{Combined Affordability Index} = \frac{(\text{Employer} + \text{Employee} + \text{Government})}{3}$$

The results appear in Table 5.

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Table 5			
Combined Affordability Index (Employee, Employer, Gov't)			
State	Combined	State	Combined
U.S. Total	1.00	Wyoming	0.77
Alabama	1.23	Delaware	0.79
Alaska	0.84	Nevada	0.80
Arizona	1.01	Connecticut	0.81
Arkansas	1.06	Virginia	0.82
California	0.82	California	0.82
Colorado	0.89	Hawaii	0.84
Connecticut	0.81	Alaska	0.84
Delaware	0.79	Maryland & DC	0.85
Florida	1.17	New Jersey	0.86
Georgia	0.92	Idaho	0.87
Hawaii	0.84	Colorado	0.89
Idaho	0.87	Washington	0.91
Illinois	0.94	Georgia	0.92
Indiana	1.15	Minnesota	0.94
Iowa	1.16	Illinois	0.94
Kansas	1.06	Massachusetts	0.97
Kentucky	1.32	Oregon	0.99
Louisiana	1.29	Michigan	0.99
Maine	1.30	U.S. Total	1.00
Maryland & DC	0.85	Texas	1.00
Massachusetts	0.97	Rhode Island	1.01
Michigan	0.99	Arizona	1.01
Minnesota	0.94	Oklahoma	1.04
Mississippi	1.35	North Dakota	1.04
Missouri	1.10	Kansas	1.06
Montana	1.06	New Hampshire	1.06
Nebraska	1.07	Utah	1.06
Nevada	0.80	Montana	1.06
New Hampshire	1.06	Arkansas	1.06
New Jersey	0.86	Nebraska	1.07
New Mexico	1.13	Ohio	1.08
New York	1.12	Missouri	1.10
North Carolina	1.16	New York	1.12
North Dakota	1.04	Vermont	1.12
Ohio	1.08	New Mexico	1.13
Oklahoma	1.04	Indiana	1.15
Oregon	0.99	South Dakota	1.15
Pennsylvania	1.20	North Carolina	1.16
Rhode Island	1.01	Iowa	1.16

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Table 5			
Combined Affordability Index (Employee, Employer, Gov't)			
State	Combined	State	Combined
South Carolina	1.26	Florida	1.17
South Dakota	1.15	Wisconsin	1.17
Tennessee	1.17	Tennessee	1.17
Texas	1.00	Pennsylvania	1.20
Utah	1.06	Alabama	1.23
Vermont	1.12	South Carolina	1.26
Virginia	0.82	Louisiana	1.29
Washington	0.91	Maine	1.30
West Virginia	1.37	Kentucky	1.32
Wisconsin	1.17	Mississippi	1.35
Wyoming	0.77	West Virginia	1.37

Affordability Results

Each of the indices was normalized to a national average of 1.00 prior to combining. Each separate table was sorted by the affordability index for each state. The lower the affordability index, the more affordable health care is (i.e., low = good, high = bad).

Dispersion of results: Based upon the overall combined affordability index, 29 of the 50 states have less than average affordable health care, with 20 having more affordable care. One state, Texas, matched the average affordability with an index of 1.00. Of the 20 more affordable states, 12 states have an HCAI below 90%.

Table 6		
Dispersion of Results		
	State	%
Range	Distribution	Distribution
< 0.80	2	4.0%
0.80 - 0.89	10	20.0%
0.90 - .99	8	16.0%
1	1	2.0%
1.01 - 1.10	13	26.0%
1.11 - 1.20	8	16.0%
1.210 - 1.30	4	8.0%
1.31 - 1.40	4	8.0%
> 1.40	0	0.0%
Total	50	1

California, one of the states with some of the most expensive health care costs expressed on a per unit of service basis, is in the most affordable category

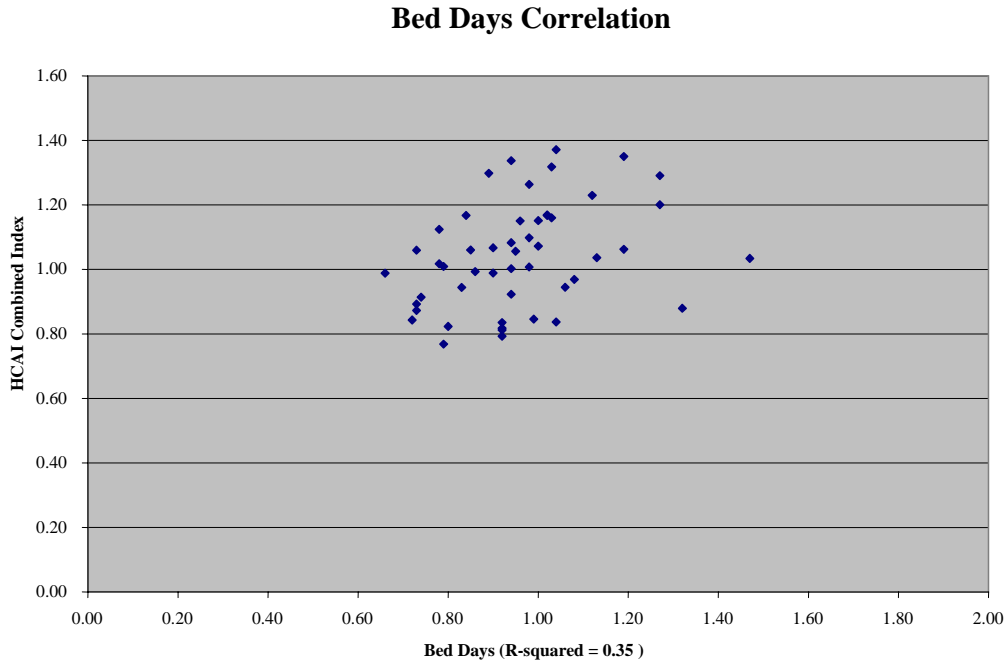
demonstrating the difference between “expensive” health care and “affordable” affordable.

Drivers of Healthcare Affordability

In order to determine what drives healthcare affordability in a state, we developed a variety of metrics that we could compare to the health care affordability indices created earlier. We developed a correlation statistic to help us evaluate the potential impact of any one metric to affordability. The results of this analysis are as follows.

- **Correlation to inpatient hospital utilization:** The HCAI and inpatient utilization levels are moderately correlated (Correlation = .35). Chart 1 presents these results. Nine of the twelve states with an overall HCAI less than .9 have better than average inpatient hospital utilization levels. Six of the eight states with an overall HCAI in the .9 - .99 range, have a better than average inpatient utilization level. On the contrary, only half (i.e., 15 of the 29) less affordable states have better than average inpatient utilization.

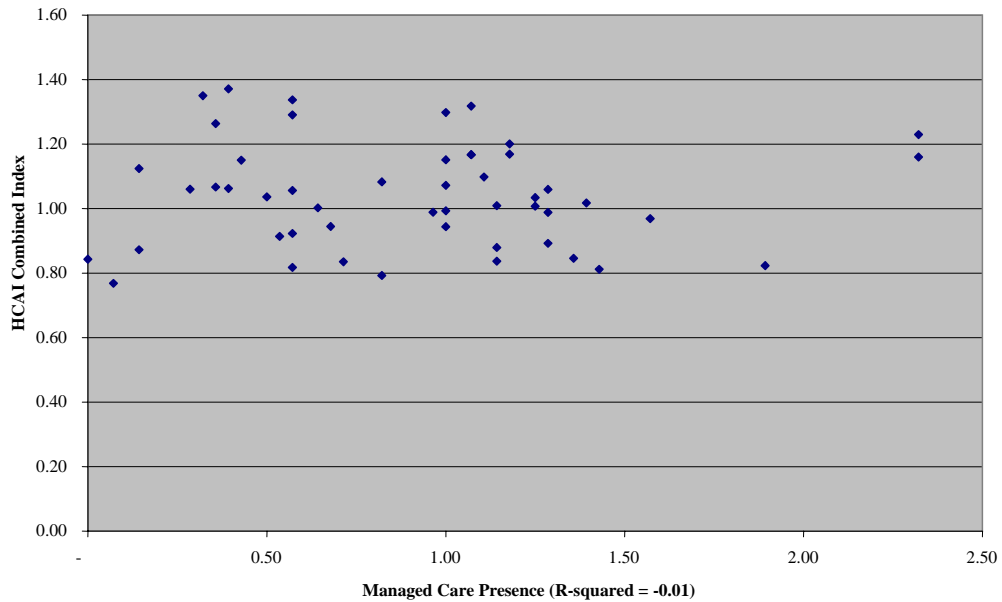
Chart 1



- **Correlation with managed care penetration:** There is no noticeable correlation between managed care penetration and health care affordability (i.e., Correlation = -.01). Previous analysis showed a greater tendency for improved health care affordability in regions with higher managed care penetration. Since the medical management effectiveness of individual managed care plans is what would drive affordability more than the presence or absence of such plans, it is not unreasonable to see limited correlation on this chart. In looking at specific states with favorable health care affordability, many of them have very strong managed care companies operating in their states, often in urban centers.

Chart 2

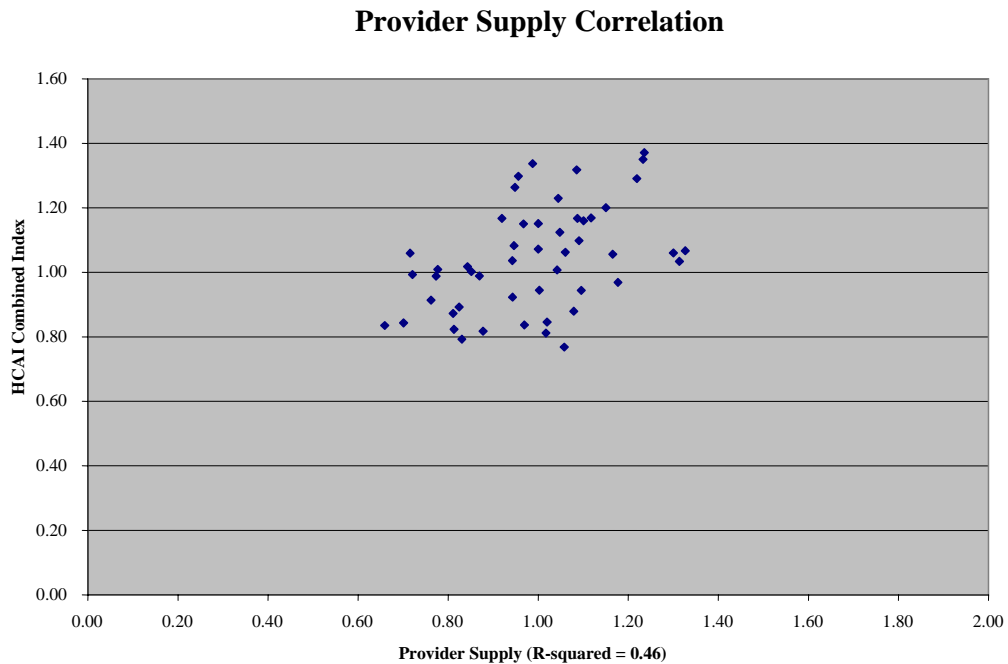
Managed Care Correlation



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- **Correlation to provider supply:** There is a reasonably strong correlation (Correlation = .46) with provider supply. Chart 3 presents these results showing the greater the supply of providers, the less affordable the healthcare system. This is consistent with the belief that health care economics generally does not follow traditional supply/demand economics. Generally the communities with the highest concentration and supply of providers have the highest health care system use rates and in turn health care costs. Many health care experts believe that an oversupply of health care providers actually increases health care costs. If true this helps to explain the affordability and provider supply relationships.

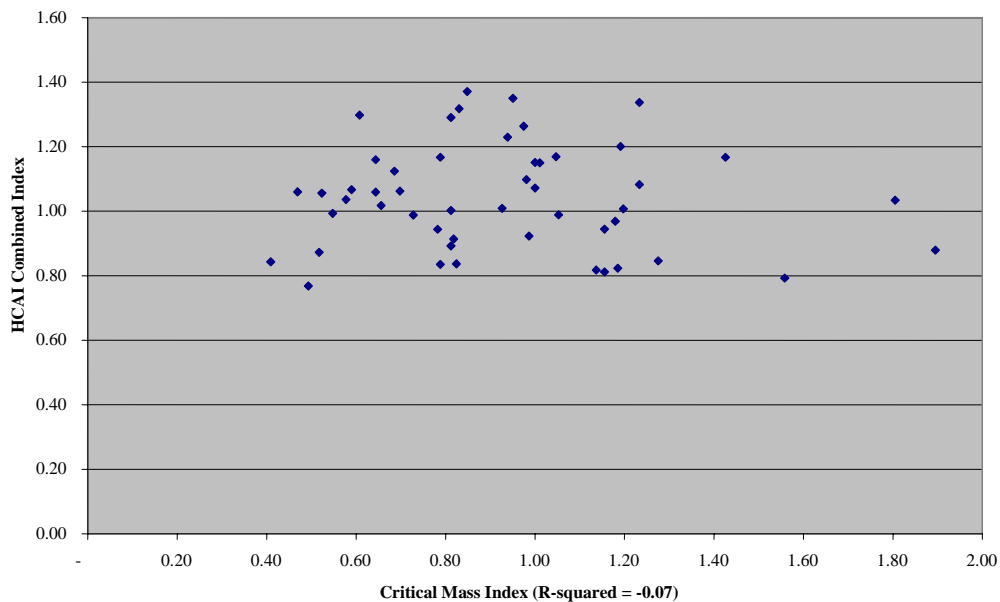
Chart 3



- **Correlation to average size of hospital:** Many experts believe that the average size of a hospital can impact the overall level of its own health care costs. The smaller a facility, the less its ability to spread fixed costs across its patient base and also the less equipped it would be to handle certain more complex cases. If true, one might be able to link the average size of the facility to health care affordability. Chart 4 shows a slight negative correlation (i.e., Correlation = -0.07) to size. This suggests slightly improved health care affordability for communities with larger average sized facilities. Most of the states have smaller than average sized facilities, with wide dispersion of affordability.

Chart 4

Critical Mass Correlation

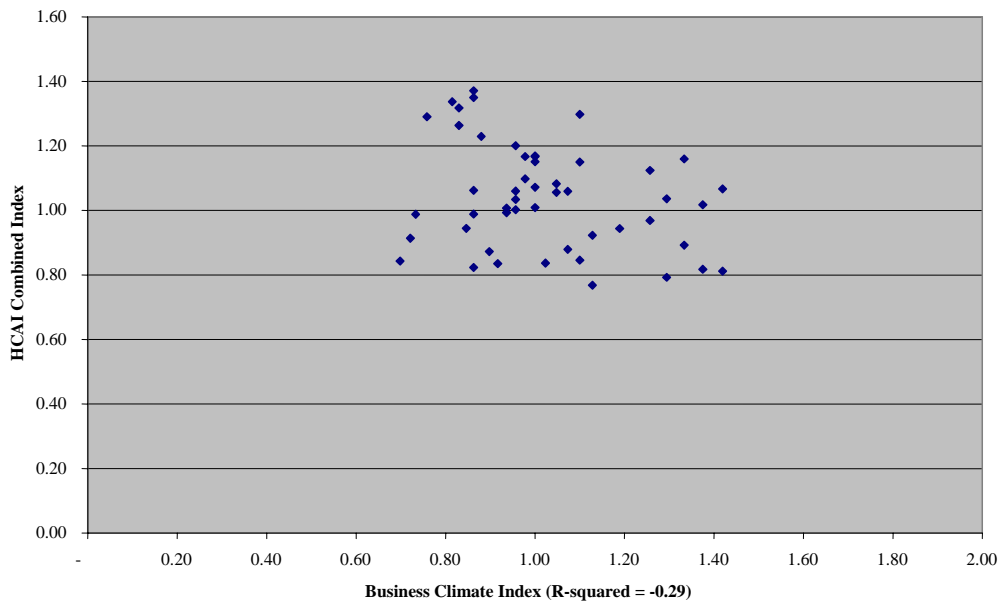


A much stronger correlation occurred between the employer and the employee affordability indices and average size, suggesting that commercial benefit programs are much more sensitive to average provider size. Perhaps the lack of government correlation is tied to their contracting/reimbursement approaches where both Medicare and Medicaid most often pay the lowest amounts to providers.

- **Correlation to business climate:** There was a strong negative correlation between business climate and health care affordability (Correlation = $-.29$) suggesting more affordable care exists where business growth and business profitability is higher. Chart 5 presents this. Historically, there is a tendency for health care utilization and health care costs to increase as unemployment increases and the general economic situation becomes uncertain. As the economic strength increases, it appears there is an improvement in affordability.

Chart 5

Business Climate Correlation

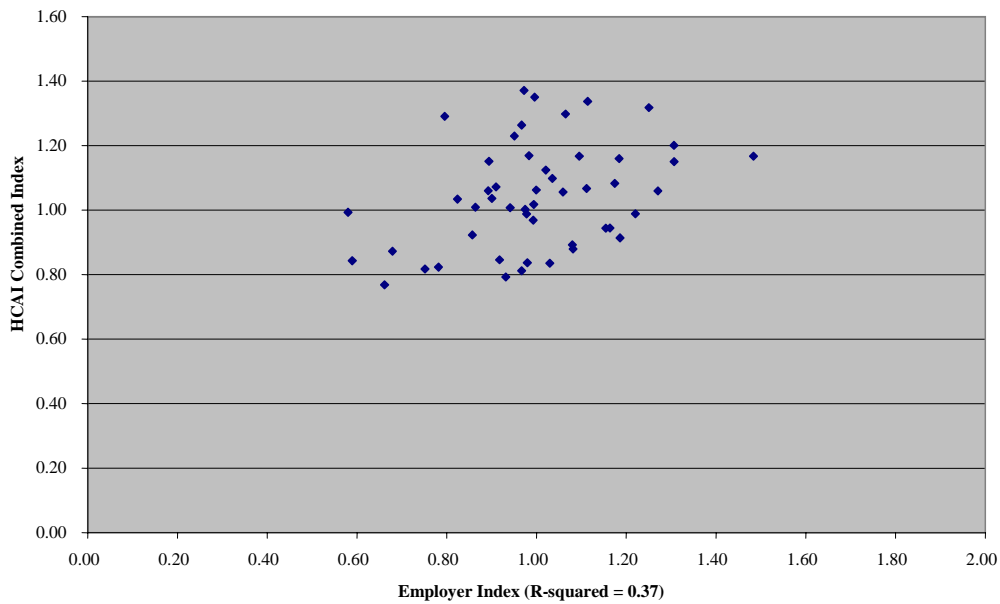


- **Correlation to health care affordability components:** Since the overall combined health care affordability index was based upon a composite of three separate indices, we analyzed the correlation of the overall index to each of its components. We wanted to find out whether any single index correlated to the overall composite index (i.e., was a driver of the overall rate).

Chart 6 shows a fairly strong correlation to the derived Employer affordability index (i.e., Correlation = .37) suggesting a connection between the employer's affordability and the overall derive affordability. Some of this is expected since one was used to help calculate the other, but it still provides interesting results.

Chart 6

Employer vs. Index

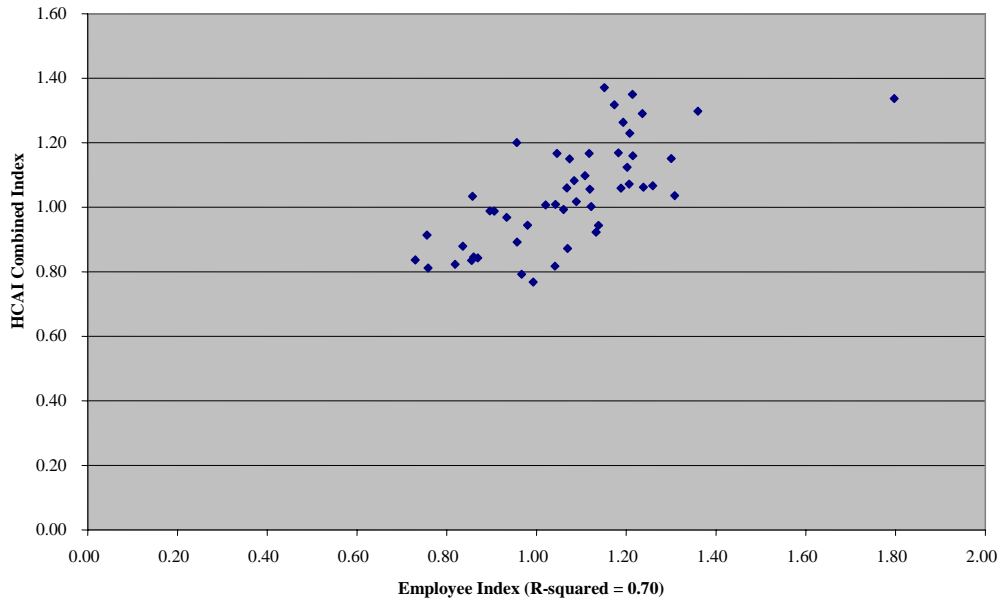


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Chart 7 showed that a much stronger correlation was found between the overall index and the employee index (i.e., Correlation = .70). This is somewhat unexpected since a good portion of the healthcare costs are paid for by the employer. It suggests that affordability at the employee level provides a good proxy for overall health care affordability. This provides a simplifying assumption which can be more carefully derived at a local level.

Chart 7

Employee vs. Index

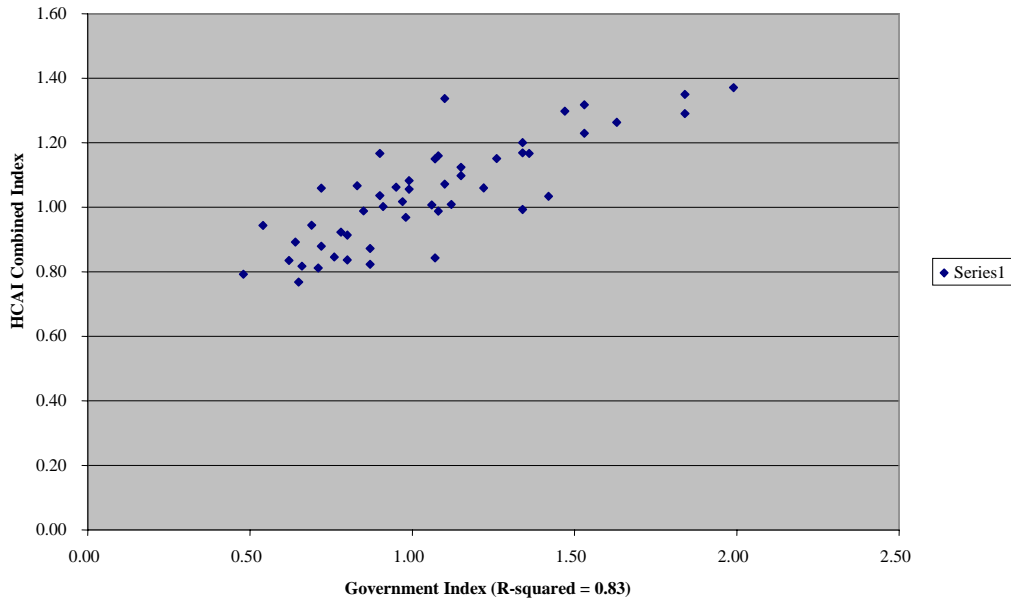


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Chart 8 shows that an even stronger correlation occurs between the government index and the overall affordability index (i.e., Correlation = .83). The government index is the most difficult to determine at a local level but can be readily derived at the state and federal level. Combining the results in Chart 7 and these results this approach can be very useful for public policymakers to determine and assess affordability and implementing helpful legislation.

Chart 8

Government vs. Index



Historical Changes In AHP HCAI

Our intent is to periodically update the AHP HCAI and monitor the change in affordability of health care services over time. This is the first update of this analysis and a comparison of this to prior analyses provides some interesting findings. The raw ratios of health care costs to revenues/taxes for each of the three components of the affordability indices is shown in Table 7. This shows that the overall US affordability ratio increased from 4.7% to 5.4% (i.e., a 16.1% increase) over the prior period, a two year span. This represents an annual worsening of about 8%.

Health costs increased considerably faster than the ability to pay for them. Although the employer costs increased, their ratio remained constant. The majority of the increased burden was passed on to employees and the government. The number of employees with health coverage obtained through work actually declined between periods. The government picked up a substantial part of the health care cost increases. Although employer costs increased in terms of dollars, the percent of revenues was flat, with a larger amount spent on fewer employees.

Table 7
Changes From Prior Period

	Employer	Employee	Private Sector	Government	Total
Current Cost (\$billions)	\$267.4	\$134.4	\$401.8	\$511.1	\$912.9
Current Revenue(\$billions)	\$10492.0	\$3757.7	\$14249.7	\$2504.1	\$16753.8
Current Ratio	2.5%	3.6%	2.8%	20.0%	5.4%
Prior Cost(\$billions)	\$250.8	\$122.2	\$373.0	\$406.2	\$779.2
Prior Revenue(\$billions)	\$10137.2	\$3835.5	\$13972.7	\$2635.8	\$16608.5
Prior Ratio	\$2.5%	3.1%	2.7%	15.4%	4.7%
% Change	0%	16%	5%	30%	16%

We have also analyzed the individual changes by state from the prior period. The changes were significant. On a relative basis, health care affordability worsened in all states with the exception of Louisiana, Montana, New Mexico and West Virginia. These states all had very high ratios in the last analysis, perhaps aberrations based upon data issues. The remaining 46 states changed as follows:

	Number of States
Less than a 5% increase	1
5% - 10% increase	9
10% - 16% increase	11
More than 16% increase	25

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Half of the states had their health care affordability worsen more than the national average, averaging more than a 32% increase. The overall health care affordability indices ranged from .67 to 1.77 in the prior analysis. In this analysis, they range from .76 to 1.37. Adjusting to a common norm from the prior analysis, the range is actually .89 to 1.59. The range has narrowed which is to be expected.

Anticipated Changes In Health Care Affordability

As the characteristics of the health care system and our ability to pay for it change over time, the HCAI will continue to vary. Future HCAI's can be projected based upon specific economic assumptions.

We have projected the AHP HCAI for both 2 years and 5 years based upon current best estimate economic projections. We expect a continued worsening of health care affordability. We anticipate an increase in the overall health care affordability index of 15% over the next 2 years, and a 32% increase over the next 5 years. The private sector increased at a smaller rate than the government sector as the employer dollar costs were stabilized by reductions in covered lives and passing costs on to employees.

Assuming no significant shift in employer/employee financial responsibility, a significant reduction in corporate earnings would be required to pay for continually increasing healthcare costs. At some point, corporations will no longer be able to fund future health care costs or cost increases. The most likely scenario is one where corporations continue to pass more of their cost to the employees. Even a minor shift to the employee significantly impacts the overall affordability of health care from the employee's perspective. As more employees back out of the employer sponsored system, a significant portion of the health care burden is indirectly transferred to the government and providers if patients are unable to pay.

Summary

Health care affordability has increased in importance over the past several years. Health care is much less affordable today than two years ago. Affordability has improved in only four states. Significant variations in affordability exist by stakeholder which in the long term tend to shift the burden or responsibility of a solution from one stakeholder to another.

The AHP Health Care Affordability Index provides several valuable insights for health plans, providers, plan sponsors and public policymakers including the following:

- Provider supply has a strong correlation with health care affordability. Matching provider supply to our appropriate health care needs will likely improve our ability to pay for health care in the future.

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- Business climate has a strong reverse correlation with health care affordability. A healthier economy improves our ability to pay for health care. A weakened economy quickly leads to serious health care concerns.
- Although less dramatic, the efficiency of health care providers and their relative average size, particularly of hospitals, impacts health care affordability. Elimination of unnecessary variation and inefficiencies in the way health care services are provided improves the affordability of health care and our ability to preserve the system as we know it.

As solutions to the affordability crisis are developed and considered it is important to recognize the relationships described above. Appropriate distribution of health care providers with an appropriate supply of providers will help improve the affordability of care. An improvement in the general economy will likely lead to improved healthcare affordability (i.e., lower affordability indices). Effective managed care principles and/or their successors will also have a positive impact on healthcare affordability. Wisely spending our limited health care resources improves the affordability of care, improves the quality of care, and helps maintain a long-term viable health care system.

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For more information on the AHP HCAI or how you might adapt it to your community, please feel free to contact the author at 951.294.0841 or by email at david.axene@axenehp.com.

Credits: Substantial portions of this document were based upon information developed by Joshua Axene, Marshall Blaine, ASA, MAAA, and John Price, FCA, MAAA.