

# Plan Management Navigator

## *Analytics for Health Plan Administration*



Healthcare Analysts

**Douglas B. Sherlock, CFA**  
sherlock@sherlockco.com

**Christopher E. de Garay**  
cgaray@sherlockco.com

**Erin Ottolini**  
erin.ottolini@sherlockco.com

**John Park, CFA**  
jpark@sherlockco.com

**Andrew L. Sherlock**  
asherlock@sherlockco.com

(215) 628-2289

## ECONOMIES OF SCALE IN HEALTH INSURANCE

### *Conclusion*

Economies of scale of administrative expenses were frequently significant, based on the *Sherlock Benchmarks*, reflecting 2022 costs. For expenses before Miscellaneous Business Taxes, both Blue Cross Blue Shield Plans (Blue) and Independent / Provider – Sponsored (IPS) plans demonstrated that with greater size comes lower costs. When scale is measured for a *combined* universe of 17 Blues and 11 IPS plans, the relationship was not statistically significant. Blue Plans have administrative costs such that larger ones have total costs that are 94% of ones half their size. For IPS plans that ratio is 90%.

Notably, the numerous activities of health plans vary in their apparent cost sensitivity to scale. In Figure 1, for Blue Cross Blue Shield Plans, approximately 40% of functions were subject to economies of scale. Blue Plans that are double the size of their peers experience costs that are 82% of those peers *in those functional areas subject to economies of scale*. The product of the Percent of Administrative Expenses subject to scale, and the 82% scale slope (called the BCG Slope) is at 93% directionally similar to the 94% relationship in the prior paragraph. At 92%, this calculated observation also applies to IPS plans where 51% of administrative expenses are subject to scale effects with a BCG slope of 84%. For the combined plans, functions comprising 32% of the total have a combined scale slope of 91% for those functions.

From a strategic perspective, this means that administrative and technical economies of scale are unlikely to create an overwhelming competitive advantage. For instance, suppose a health plan operated at \$55 PMPM. Using the Blue Cross Blue Shield universe model shown in Figure 1, 40% or \$21.77 PMPM would be subject to economies of scale and, if the enterprise doubled in size, \$3.92 or 7.1% would be saved though pure scale advantages. While an additional \$3.92 PMPM would be welcomed by any CFO, the modest effect of scale implies that firms of modest scale can be on a similar competitive footing as their larger peers on administrative expenses.

### **Figure 1. Economies of Scale**

Administrative Expenses Subject to Economies of Scale and BCG Slopes  
*BCBS, IPS, and Combined*

	Blue Cross Blue Shield Plans	Independent / Provider - Sponsored Plans	Combined Plans
Percent of Administrative Expenses Subject to Scale	39.6%	51.3%	31.8%
BCG Scale Slope of Functions Subject to Scale	82.0%	83.7%	91.1%

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## *Background on Economies of Scale and Cost Identification*

While the largest costs for health plans are health benefits, not every benefit plan sponsor pays health plans to assume health benefit variance risk. For Blue Cross Blue Shield Plans, only about 50% of comprehensive members are fully-insured and, among Independent / Provider Sponsored plans, only about 70% are. By contrast, every member and each of their sponsors pay health plans to assume responsibility for administrative activities of their health benefit programs.

“Administrative,” means all health plan costs other than payments to health care providers for care rendered to health plan members. Health insurance administrative costs include compensation, depreciation and amortization, leases of office space, advertising costs, externally provided disease management, consulting services and similar expenses. Classifications of expenses in this way are sometimes called natural accounting categories.

The natural accounting categories poorly describe the activities health plans perform especially since there may be differences between how organizations execute those activities, such as the decision to outsource. *Sherlock Benchmark* analyses reflect those same natural accounting costs reorganized into the activities themselves. Called functions, these activities range from Provider Services to Claims Adjudication to Corporate Services and Medical Management. Thus, Claims Adjudication includes its share of compensation, depreciation and so forth. It is the activities, not the natural accounting categories, that capture the dynamics giving rise to the technical and administrative economies of scale because they are not conflated with the mix of resources employed to execute those activities.

The analyses presented here show that the technical and administrative economies of scale of health insurance are relatively modest. To define terms, a *technical* economy of scale arises from an investment in a capital-intensive process. The commitment to automate claims adjudication activities is an example. A successful investment in auto-adjudication systems and electronic claims submission systems can yield a return in a decline in the end-to-end cost of processing and paying claims, and those savings may increase with volume. Overcoming the cost of original investment is what gives rise to the reduced marginal costs resulting from technical economies of scale.

An example of *administrative* economies of scale is covering relatively fixed Finance and Accounting costs with greater volumes of members. If the cost of preparing and issuing financial statements is independent of the size of the organization, then the larger the organization, the more members there are, and the lower the per member cost of those financial statements. This analysis does not address other forms of economies of scale. An example is purchasing economies of scale, the case in which high market share could increase the bargaining power of insurers versus providers.

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As noted previously, the limited effects of economies of scale means that many health plans of relatively modest size can achieve near administrative expense parity with their larger peers through effective execution, especially when combined with another attribute such as differentiation. This observation does not always comport with conventional wisdom so some leaders are skeptical that achieving efficiency is even possible for smaller plans. Trends in health plan business combinations indicates that this view is widely shared. This skepticism may in part reflect experience with other industries, such as hospitals or manufacturing; these industries display economies of scale because they possess the high fixed costs that are its basis. This view may also reflect that health insurers do indeed feel the effects of operating leverage during periods of short-term membership swings.

Understanding economies of scale, and optimizing functional costs at a particular scale, is important because, while scale effects are ultimately modest, the activities are integral to a health plan's operations. And while small relative to premiums, cost savings impact the ability of the health plan to reinvest. Finally, when health care costs are cyclical, optimized administrative costs amplifies the effect of favorable health care trends on operating profits and mutes operating losses.

### *Method*

This analysis relies on the results of the 2023 *Sherlock Benchmarks* for universes of Blue Cross Blue Shield Plans and Independent/Provider-Sponsored health plans.

All data is for the 2022 calendar year and has undergone extensive validation procedures both by us and by the plans themselves. Collectively, the 28 plans served 61 million Americans. The range of membership was from about 400,000 to more than five million among Blue Plans, and about 200,000 to 1.3 million among IPS plans.

Economies of scale occurs when per unit costs decline as volume of output increases. Because the "output" of a health plan is health coverage services to its members, volume is defined as member months, which are reported by the plans. The costs that are the subject of this analysis are administrative, classified by function as described in the previous section. Each plan in the study reported its costs segmented into approximately seventy functions and sub-functions, allowing each of the activities to be analyzed individually. The unit costs this analysis are administrative costs expressed Per Member Per Month (PMPM).

Any analysis of health plan economies of scale is complicated by the extraneous factor of differences in the product mixes between the health plans. It costs much more to administer a comprehensive product sold to seniors than to people of working age since administrative activities are often related to the underlying health needs of the beneficiary. For instance, the older one is, the more health care one requires and the more claims processing costs are incurred by the insurer.

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However, each organization participating in the *Sherlock Benchmarks* reported each function's costs segmented by product, such as Medicare Advantage and Commercial Insured. So, for the purposes of these analyses, we expressed costs in such a way as to eliminate the effects of product mix differences. To do this, for each function for each plan, we expressed expenses as *differences* from the mean universe values, *after reweighting the universe values* by that plan's own product mix. Health plans with high cost values are expressed as greater than 100% while low values are less than 100%.

We measured whether economies of scale exist by regressing costs in each function (expressed as described above) against member months. A regression analysis fits a line through a scatter of each of the membership/cost points for each plan that minimizes the distance between those points and the line. Since technical or administrative economies of scale imply the existence of fixed and variable costs, where they exist, they plot as a curve. For ease and intuitive appeal, we converted the relationship to a straight line by calculating the regressions as the natural logs of the *percent* differences from mean values against the natural logs of the member months. (The use of natural logs requires positive values, so cost differences were expressed as percents, as mentioned in the previous paragraph.)

We considered the relationship between membership and costs to be significant if it displayed p-values of less than 0.1. A p-value is widely used to gauge the reliability of modeled relationships. Suppose a regression yields a 0.1 p-value: it can be interpreted to mean, "Assuming that there weren't economies of scale, you'd obtain the observed difference or more in 10% of such studies due to random sampling error." So the lower the p-value, the more reliable the results.

Regression lines can have positive or negative slopes but, since economies of scale mean lower costs per member as membership increases, the discussion of the results is focused on negative slopes. The BCG (Boston Consulting Group) Slope is an intuitive way of expressing the slope of scale and it means the percent of the pre-doubling costs that the function will exhibit if the plan doubles in size. It is calculated as 2 to the power of the slope of the regression line.

Note that, where economies of scale exist, they are apparently not the only factor in cost differences. The  $R^2$  describes the degree to which all the data points are found on the slope. In other words, the predictive value of scale is that it explains  $R^2$  percent of the differences between the points. Few of the regression analyses have an  $R^2$  that exceed 50%. So, while scale plays an important role in those instances that we identify as significant, there are other cost factors other than scale that also help explain the cost differences between the plans' function costs. For instance, strategic considerations may weigh against the lowest possible costs at a given scale.

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Figures 2-4 show the results of the regressions for each function in Blue Cross Blue Shield Plans, Independent / Provider – Sponsored Plans and the combination of both sets.

### *Blue Cross Blue Shield Results*

Figure 2 shows the results of regression analyses of costs in each function and members for Blue Cross Blue Shield Plans. The 17 Plans included here range from just under 400,000 to more than five million members.

Of Blue Cross Blue Shield administrative expenses, 39.6% are subject to economies of scale. A doubling of the size of these plans is estimated to lead to those costs that are subject to scale that are 82.0% of their pre-doubling value. The Subtotal Expenses, which exclude Miscellaneous Business Taxes, also displayed economies of scale with a BCG slope of 93.8%.

Of the 73 functions and sub-functions, 15 exhibited economies of scale at a p-value level we considered significant. These included Information Systems, Actuarial, the Corporate Services Function, Provider Contracting, Marketing, and others as shown in Figure 2.

There were no Blue Cross Blue Shield functions with p-values of less than 0.1 that exhibited *diseconomies* of scale. In other words, there were no functions that met our test for significance that displayed experienced an *increase* in costs with an *increase* in scale.

### *Independent / Provider - Sponsored Plan Results*

Figure 3 shows the results of regression analyses of costs in each function and member months for Independent / Provider – Sponsored plans.

The 11 plans used for this analysis range from just over 200,000 to 1.3 million members. Of their administrative expense, 51.3% are in functions that exhibit economies of scale. A doubling of the size of these plans is calculated to lead to costs for those functions subject to economies of scale that are 83.7% of their pre-doubling value. The Total Expenses classification, before Miscellaneous Business Taxes, also displayed economies of scale with a BCG slope of 90.3%.

Of the 70 functions and sub-functions for IPS plans, 20 displayed economies of scale. They included Media and Advertising, Provider Network Management and Services, Customer Services, Claims Information Systems, Actuarial, Corporate Executive and Governance and Association Dues and License / Filing Fees.

The only function that exhibited statistically significant diseconomies of scale was Health and Wellness. That is, larger plans in this universe were more likely to spend more on this activity.

<b>Figure 2. Economies of Scale</b>				
<b>Scalar Effect on PMPM Costs, Mix-Adjusted</b>				
<b>Blue Cross and Blue Shield Plans</b>				
	<b>R-Squared</b>	<b>BCG Slope</b>	<b>P-Value</b>	<b>Number of Plans</b>
<b>1. Rating and Underwriting</b>	0.1%	98.9%	0.91	17
(a) Employer Group Reporting	12.0%	69.9%	0.21	15
(b) Risk Adjustment	0.3%	103.9%	0.85	16
(c) Other Rating and Underwriting	0.0%	100.1%	0.99	17
<b>2. Marketing</b>	21.7%	81.0%	0.06	17
(a) Product Development and Market Research	9.5%	81.4%	0.23	17
(b) Member and Group Communication	5.6%	85.1%	0.36	17
(c) Other Marketing	15.7%	76.6%	0.12	17
<b>3. Sales</b>	11.1%	92.6%	0.19	17
(a) Account Services	4.3%	91.7%	0.42	17
(b) Internal Sales Commissions	8.4%	89.3%	0.29	15
(c) Other Sales	0.5%	98.0%	0.78	17
<b>4. External Broker Commissions</b>	6.0%	107.8%	0.34	17
<b>5. Advertising and Promotion</b>	6.5%	93.4%	0.32	17
(a) Media and Advertising	8.1%	92.5%	0.27	17
(b) Charitable Contributions	0.1%	102.3%	0.90	15
<b>6. Provider Network Management and Services</b>	0.1%	100.8%	0.91	17
(a) Provider Relations Services	2.4%	108.0%	0.55	17
(b) Provider Contracting	29.7%	83.5%	0.02	17
(1) Provider Configuration	4.0%	83.3%	0.51	13
(2) Other Provider Contracting	1.0%	96.4%	0.74	14
(c) Other Provider Network Management and Services	1.6%	111.2%	0.63	17
<b>7. Medical Management / Quality Assurance / Wellness</b>	1.3%	97.9%	0.66	17
(a) Precertification	6.2%	86.9%	0.34	17
(b) Case Management	9.9%	121.3%	0.22	17
(c) Disease Management	11.6%	71.4%	0.21	15
(d) Nurse Information Line	0.3%	95.2%	0.85	15
(e) Health and Wellness	0.1%	98.5%	0.91	16
(f) Quality Components	3.0%	108.5%	0.51	17
(g) Medical Informatics	19.2%	80.9%	0.09	16
(h) Utilization Review	1.3%	91.5%	0.66	17
(i) Other Medical Management	13.3%	84.4%	0.15	17
<b>8. Enrollment / Membership / Billing</b>	2.9%	95.4%	0.52	17
<b>9. Customer Services</b>	1.6%	102.9%	0.63	17
(a) Member Services	3.3%	104.5%	0.48	17
(c) Grievances and Appeals	6.6%	86.3%	0.34	16
<b>10. Claim and Encounter Capture and Adjudication</b>	1.5%	96.8%	0.64	17
(a) Coordination of Benefits (COB) and Subrogation	21.8%	80.1%	0.07	16
(b) BlueCard Home and Custom Par Fees	0.6%	94.0%	0.77	17
(c) Medicare Crossover Fees	8.7%	118.4%	0.33	13
(d) Payment Integrity	4.3%	119.8%	0.42	17
(e) Other Claim and Encounter Capture and Adjudication	6.4%	91.6%	0.33	17
<b>11. Information Systems Expenses</b>	66.1%	80.4%	0.00	17
(a) Operations and Support Services	10.9%	87.6%	0.20	17
(b) Applications Maintenance	48.2%	60.2%	0.00	17
(1) Benefit Configuration	31.3%	57.4%	0.03	15
(2) Other Applications Maintenance	22.1%	73.5%	0.08	15
(c) Applications Acquisition and Development	15.2%	78.9%	0.12	17
(1) Applications Amortization and Licensing Expenses	0.0%	101.1%	0.95	16
(2) Pre-Planning Project Costs	50.9%	53.6%	0.00	17
(d) Security Administration and Enforcement	16.3%	81.6%	0.11	17
<b>12. Finance and Accounting</b>	0.6%	97.4%	0.76	17
(a) Credit Card Fees	1.4%	108.5%	0.70	13
(b) Other Finance and Accounting	4.1%	94.2%	0.43	17
<b>13. Actuarial</b>	35.2%	85.0%	0.01	17
<b>14. Corporate Services Function</b>	35.2%	86.8%	0.01	17
(a) Human Resources	39.9%	81.3%	0.01	17
(b) Legal	23.5%	83.0%	0.05	17
(1) Compliance	7.0%	80.0%	0.30	17
(2) Government Affairs	6.9%	111.8%	0.33	16
(3) Outside Litigation	0.6%	104.8%	0.77	16
(4) Fraud, Waste & Abuse	6.7%	81.2%	0.32	17
(5) All Other Legal	58.4%	69.2%	0.00	17
(c) Facilities	22.7%	90.7%	0.05	17
(d) OPEB	9.2%	74.3%	0.36	11
(e) Audit	11.0%	88.7%	0.19	17
(f) Purchasing	0.2%	104.4%	0.87	15
(g) Imaging	0.3%	105.2%	0.85	13
(h) Printing and Mailroom	7.0%	87.7%	0.32	16
(i) Risk Management	0.0%	101.0%	0.96	14
(j) Other Corporate Services Function	1.1%	89.9%	0.69	17
<b>15. Corporate Executive &amp; Governance</b>	2.3%	109.2%	0.56	17
<b>16. Association Dues and License/Filing Fees</b>	0.3%	103.4%	0.84	17
<b>Subtotal Expenses</b>	26.6%	93.8%	0.03	17
<b>17. Miscellaneous Business Taxes</b>	10.2%	117.8%	0.21	17
<b>Total Expenses</b>	9.6%	95.9%	0.23	17

<b>Figure 3. Economies of Scale</b>				
<b>Scalar Effect on PMPM Costs, Mix-Adjusted</b>				
<b>Independent / Provider-Sponsored Plans</b>				
	<b>R-Squared</b>	<b>BCG Slope</b>	<b>P-Value</b>	<b>Number of Plans</b>
1. Rating and Underwriting	7.0%	94.4%	0.43	11
(b) Risk Adjustment	14.1%	107.8%	0.26	11
(c) Other Rating and Underwriting	19.2%	78.6%	0.18	11
2. Marketing	0.8%	97.6%	0.80	11
(a) Product Development and Market Research	1.1%	91.4%	0.76	11
(b) Member and Group Communication	8.0%	80.8%	0.40	11
(c) Other Marketing	0.5%	95.4%	0.84	11
3. Sales	0.0%	99.5%	0.96	11
(a) Account Services	2.3%	93.3%	0.65	11
(b) Internal Sales Commissions	0.0%	99.1%	0.95	11
(c) Other Sales	0.1%	101.2%	0.93	11
4. External Broker Commissions	22.5%	113.8%	0.14	11
5. Advertising and Promotion	25.4%	81.5%	0.11	11
(a) Media and Advertising	32.8%	77.7%	0.07	11
(b) Charitable Contributions	7.2%	138.7%	0.52	8
6. Provider Network Management and Services	77.5%	73.1%	0.00	11
(a) Provider Relations Services	76.8%	65.1%	0.00	11
(b) Provider Contracting	37.0%	75.9%	0.05	11
(1) Provider Configuration	35.6%	63.1%	0.05	11
(2) Other Provider Contracting	13.8%	81.9%	0.26	11
(c) Other Provider Network Management and Services	0.0%	99.1%	0.95	11
7. Medical Management / Quality Assurance / Wellness	1.9%	97.1%	0.68	11
(a) Precertification	11.0%	83.0%	0.32	11
(b) Case Management	2.7%	105.1%	0.63	11
(c) Disease Management	2.7%	113.6%	0.63	11
(d) Nurse Information Line	45.9%	173.3%	0.21	5
(e) Health and Wellness	42.1%	168.5%	0.03	11
(f) Quality Components	21.2%	85.6%	0.15	11
(g) Medical Informatics	8.7%	113.1%	0.38	11
(h) Utilization Review	7.2%	79.7%	0.45	10
(i) Other Medical Management	1.7%	94.4%	0.70	11
8. Enrollment / Membership / Billing	11.2%	92.4%	0.31	11
(a) Enrollment and Membership	0.9%	97.8%	0.78	11
(b) Billing	37.6%	82.7%	0.04	11
9. Customer Services	45.1%	81.4%	0.02	11
(a) Member Services	40.7%	81.8%	0.03	11
(b) Printed Materials and Other	1.2%	84.4%	0.77	9
(c) Grievances and Appeals	38.3%	74.4%	0.04	11
10. Claim and Encounter Capture and Adjudication	33.1%	83.4%	0.06	11
(a) Coordination of Benefits (COB) and Subrogation	9.1%	86.3%	0.37	11
(d) Payment Integrity	7.4%	121.2%	0.42	11
(e) Other Claim and Encounter Capture and Adjudication	53.9%	76.1%	0.01	11
11. Information Systems Expenses	27.9%	90.7%	0.10	11
(a) Operations and Support Services	26.0%	82.5%	0.11	11
(b) Applications Maintenance	3.7%	92.1%	0.57	11
(1) Benefit Configuration	12.9%	81.7%	0.31	10
(2) Other Applications Maintenance	0.2%	97.8%	0.91	10
(c) Applications Acquisition and Development	4.2%	108.8%	0.55	11
(d) Security Administration and Enforcement	0.0%	98.1%	0.96	11
12. Finance and Accounting	24.5%	83.1%	0.12	11
(a) Credit Card Fees	12.5%	68.6%	0.29	11
(b) Other Finance and Accounting	27.1%	84.7%	0.10	11
13. Actuarial	46.8%	73.6%	0.02	11
14. Corporate Services Function	21.5%	86.0%	0.15	11
(a) Human Resources	4.1%	91.7%	0.55	11
(b) Legal	18.9%	82.9%	0.18	11
(1) Compliance	48.7%	73.9%	0.02	11
(2) Government Affairs	45.5%	72.7%	0.07	8
(3) Outside Litigation	6.8%	135.3%	0.62	6
(4) Fraud, Waste and Abuse	2.6%	84.6%	0.66	10
(5) All Other Legal	0.7%	94.4%	0.80	11
(c) Facilities	0.6%	97.2%	0.81	11
(e) Audit	39.0%	69.0%	0.05	10
(f) Purchasing	0.1%	97.1%	0.95	8
(g) Imaging	23.4%	170.5%	0.19	9
(h) Printing and Mailroom	29.5%	58.0%	0.08	11
(i) Risk Management	28.5%	61.8%	0.09	11
(j) Other Corporate Services Function	0.1%	101.9%	0.93	10
15. Corporate Executive & Governance	29.2%	77.7%	0.09	11
16. Association Dues and License/Filing Fees	32.8%	54.0%	0.07	11
<b>Subtotal Expenses</b>	<b>35.2%</b>	<b>90.3%</b>	<b>0.05</b>	<b>11</b>
17. Miscellaneous Business Taxes	0.1%	102.6%	0.92	11
<b>Total Expenses</b>	<b>42.6%</b>	<b>90.5%</b>	<b>0.03</b>	<b>11</b>

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## *Combined Universe Results*

Each of the two universes previously described reflect their origins and their operational philosophies and cultures. For instance, unlike the Blue Cross Blue Shield universe, most of the Independent / Provider – Sponsored Plans are owned by health systems. One reflection of this is that, holding product mix equal, Blue Plans emphasize Information Systems and IPS plans emphasize Medical Management.

Figure 4 shows the results of regression analyses of costs in each function and members for the combined set of Blue Cross Blue Shield Plans and Independent / Provider – Sponsored Plans. It is interesting because the combined universe has a larger sample size, and the range of plan size was greater.

As previously mentioned, the 28 plans included here range from just over 200,000 to over five million members. Of their administrative expenses, 31.8% are subject to economies of scale. A doubling of the size of these plans is calculated to lead to those costs falling to 91.1% of their pre-doubling value.

Of the 67 total functions and sub-functions for the combined universe, 11 displayed economies of scale. Those areas included Advertising and Promotion, Provider Network Management and Services, Information Systems, Actuarial, and others as shown in Figure 4.

The areas with statistically significant *diseconomies* of scale were External Broker Commissions, Health and Wellness and Outside Litigation.

## *Application*

Understanding economies of scale can be helpful in situations in which it is necessary to estimate the cost structure of a health plan whose size changes. Organic growth and acquisitions are two business situations in which such an analysis would apply.

Figure 5, shown on page 10, illustrates how the values calculated in the combined universe case (Figure 4) would impact costs. Recall from Figure 1 that, for the Combined set of Blue Cross Blue Shield and Independent / Provider – Sponsored plans, the BCG Slope was 91.1% for the 31.8% of administrative costs that are subject to economies of scale.



**Figure 4. Economies of Scale**

Scalar Effect on PMPM Costs, Mix-Adjusted  
Blue and IPS Plans

	R-Squared	BCG Slope	P-Value	Number of Plans
1. Rating and Underwriting	0.0%	99.4%	0.91	28
(b) Risk Adjustment	0.2%	102.0%	0.83	27
(c) Other Rating and Underwriting	4.6%	92.3%	0.27	28
2. Marketing	1.3%	96.3%	0.57	28
(a) Product Development and Market Research	0.2%	103.3%	0.81	28
(b) Member and Group Communication	1.8%	92.4%	0.49	28
(c) Other Marketing	2.4%	91.6%	0.43	28
3. Sales	0.2%	99.1%	0.83	28
(a) Account Services	0.7%	97.0%	0.67	28
(b) Internal Sales Commissions	0.0%	99.5%	0.95	26
(c) Other Sales	1.4%	103.3%	0.55	28
4. External Broker Commissions	20.0%	112.3%	0.02	28
5. Advertising and Promotion	14.9%	89.7%	0.04	28
(a) Media and Advertising	18.7%	87.8%	0.02	28
(b) Charitable Contributions	6.4%	122.9%	0.24	23
6. Provider Network Management and Services	22.7%	87.3%	0.01	28
(a) Provider Relations Services	13.6%	84.5%	0.05	28
(b) Provider Contracting	37.7%	81.4%	0.00	28
(1) Provider Configuration	32.6%	64.7%	0.00	24
(2) Other Provider Contracting	4.2%	92.2%	0.33	25
(c) Other Provider Network Management and Services	0.0%	100.4%	0.98	28
7. Medical Management / Quality Assurance / Wellness	0.3%	100.9%	0.79	28
(a) Precertification	0.9%	95.5%	0.63	28
(b) Case Management	3.8%	108.5%	0.32	28
(c) Disease Management	1.7%	111.1%	0.53	25
(d) Nurse Information Line	1.3%	91.7%	0.64	20
(e) Health and Wellness	17.0%	125.3%	0.03	27
(f) Quality Components	0.0%	99.7%	0.96	28
(g) Medical Informatics	3.5%	92.9%	0.35	27
(h) Utilization Review	1.9%	91.0%	0.49	27
(i) Other Medical Management	4.2%	92.8%	0.29	28
8. Enrollment / Membership / Billing	0.0%	100.4%	0.93	28
9. Customer Services	0.3%	101.2%	0.79	28
(a) Member Services	0.5%	101.8%	0.71	28
(c) Grievances and Appeals	3.4%	91.5%	0.36	27
10. Claim and Encounter Capture and Adjudication	1.1%	103.1%	0.59	28
(a) Coordination of Benefits (COB) and Subrogation	9.5%	87.6%	0.12	27
(d) Payment Integrity	3.8%	114.8%	0.32	28
(e) Other Claim and Encounter Capture and Adjudication	0.4%	102.2%	0.76	28
11. Information Systems Expenses	12.8%	92.6%	0.06	28
(a) Operations and Support Services	4.3%	93.3%	0.29	28
(b) Applications Maintenance	20.3%	78.6%	0.02	28
(1) Benefit Configuration	25.9%	69.0%	0.01	25
(2) Other Applications Maintenance	0.1%	98.3%	0.88	25
(c) Applications Acquisition and Development	1.4%	94.6%	0.55	28
(d) Security Administration and Enforcement	3.6%	114.6%	0.33	28
12. Finance and Accounting	4.3%	94.1%	0.29	28
(a) Credit Card Fees	0.0%	100.1%	0.99	24
(b) Other Finance and Accounting	7.7%	93.0%	0.15	28
13. Actuarial	25.7%	86.8%	0.01	28
14. Corporate Services Function	2.8%	96.0%	0.40	28
(a) Human Resources	1.8%	95.9%	0.50	28
(b) Legal	7.1%	91.4%	0.17	28
(1) Compliance	18.6%	76.8%	0.02	28
(2) Government Affairs	0.5%	97.4%	0.74	24
(3) Outside Litigation	20.5%	143.7%	0.03	22
(4) Fraud, Waste and Abuse	3.9%	86.2%	0.32	27
(5) All Other Legal	1.1%	94.8%	0.60	28
(c) Facilities	1.5%	97.1%	0.53	28
(e) Audit	0.1%	101.3%	0.89	27
(f) Purchasing	9.5%	134.4%	0.15	23
(g) Imaging	12.9%	137.5%	0.10	22
(h) Printing and Mailroom	5.1%	87.0%	0.26	27
(i) Risk Management	0.2%	103.0%	0.85	25
(j) Other Corporate Services Function	0.1%	102.4%	0.87	27
15. Corporate Executive & Governance	0.3%	102.4%	0.79	28
16. Association Dues and License/Filing Fees	0.1%	102.5%	0.86	28
<b>Subtotal Expenses</b>	0.9%	98.8%	0.63	28
17. Miscellaneous Business Taxes	9.7%	119.0%	0.11	28
<b>Total Expenses</b>	0.0%	100.1%	0.97	28

This illustrates the case where a firm exactly doubles in size through an acquisition, and the 91.1% BCG Slope applies to those functions subject to economies of scale. The combined firm is estimated to enjoy savings of \$37 million on a combined administrative expense of \$1.320 billion or by 2.8%. This can also be calculated:  $(100.0\% - 91.1\%) \times 31.8\% = 2.8\%$ . Note while the 2.8% savings is modest in the context of the combined administrative expenses, the percent impact on combined operating profits is much greater. The increase from \$326 million to \$364 million is 11.4%.

While the BCG Slope is a wonderfully intuitive way of thinking about economies of scale, doubling the size of the firm is a special case. So, to calculate all possible alternatives, the BCG Slope must be converted to a *marginal* scale effect. The marginal scale effect is the BCG Slope adapted for the size of the smaller plan (“Target”) relative to the larger plan (“Suitor”). We show its calculation in Figure 6.

Suppose a health plan increases its membership by 50%, rather than doubling. This would occur if a million member plan was to acquire a 500,000 member plan. The 84.1% marginal scale effect is BCG Slope adapted for this 50% increase. The calculations converting the 91.1% scale effect to the 84.1% marginal scale effect are described on the left side of Figure 6 and are applied as an example on the right side. (Note that a direct calculation of the marginal scale effect for total expenses from the BCG slope is 84.2%. This slight difference results from using the combined cost slope of the scalable functions to make this calculation. The 84.1% marginal scale effect is the *result* of each of the functions being individually adapted.)

**Figure 5. Economies of Scale**  
Application of Scalability  
*Combined BCBS and IPS Plans' Slopes*

<b>Assumptions</b>	Suitor	Target	Total	Effect of Scale	Combined After Scale
Members	1,000,000	1,000,000	2,000,000		2,000,000
Revenues PMPM	\$490	\$490	\$490		\$490
Health Benefit Ratio	86.0%	86.0%	86.0%		86.0%
Administration/Premium	11.2%	11.2%	11.2%	-0.3%	10.9%
Total Administration PMPM	\$55.00	\$55.00	\$55.00	-\$1.55	\$53.45
<b>Scale Effect</b>					<b>91.1%</b>
Scalable Proportion of Administration	31.8%	31.8%	31.8%		31.8%
Scalable Administration/Premium	3.6%	3.6%	3.6%		3.3%
Scalable Administration PMPM	\$17.50	\$17.50	\$17.50		\$15.95
Scalable Administration	\$210,001,838	\$210,001,838	\$420,003,676	-\$37,175,446	\$382,828,229
Non Scalable Administration/Premium	7.7%	7.7%	7.7%		7.7%
Non Scalable Administration PMPM	\$37.50	\$37.50	\$37.50		\$37.50
Non Scalable Administration	\$449,998,162	\$449,998,162	\$899,996,324		\$899,996,324
<b>Income Statements</b>					<b>Combined</b>
Revenues	\$5,880,000,000	\$5,880,000,000	\$11,760,000,000	\$0	\$11,760,000,000
Health Benefits	5,056,800,000	5,056,800,000	10,113,600,000	0	10,113,600,000
Administration	660,000,000	660,000,000	1,320,000,000	-37,175,446	1,282,824,554
Operating Profits	\$163,200,000	\$163,200,000	\$326,400,000	\$37,175,446	\$363,575,446
<b>Operating Margin</b>	<b>2.8%</b>	<b>2.8%</b>	<b>2.8%</b>	<b>0.3%</b>	<b>3.1%</b>

Incidentally, the use of the marginal scale effect can also be applied to the Figure 5 case of the combination of two similarly sized organizations. The steps used in Figure 6 yield a marginal scale effect of 82.3% which, when applied to the \$210 million in the Target's scalable administration, produces the \$37 million savings in Figure 5.

In Figure 7, we apply this marginal scale value to estimate the effect of economies of scale on a business combination where the Target is one-half the size of the suitor. To calculate the scale related saving we multiplying the calculated marginal scale effect of 84.1% (in Figure 6) by \$105.0 million in Target expenses subject to scale yields an estimated effect of scale on the target plan of \$16.6 million. Again, the percent effect on earnings is greater than that of costs: while the Target's administrative expenses fall by 5.0%, its operating profits increase by 20.4%.

Once the framework for the marginal scalar effect is established, then it can be universally applied to the various scale scenarios.

An estimate of the effect of economies of scale in this way can be helpful as an initial approximation or as a default assumption when more in-depth analysis is not feasible. Since each organization has its own unique cost structure and the slopes of the economies of scale vary by function, it will be more appropriate to apply each of the scale slopes to each functional area. While this greater granularity hones the estimate, due diligence will likely modify that estimate. For instance, an overlapping network of providers could have a more pronounced effect on scale of Provider Contracting than may be evident from the regression models.

Formula		Example	
Step 1	$2^x$ = BCG Slope	$2^x$ = 91.1%	Scale Effect from Figure 1
Step 2	$x = \frac{\ln(\text{BCG})}{\ln(2)}$	$x = \frac{\ln(.911)}{\ln(2)} = -0.134$	Derived Slope from BCG Slope in Figure 1
Step 3	$(1 + \text{Proportion of Target-to-Suitor})^x$ = Target - Adjusted "BCG Slope"	$(1 + 0.5)^{-0.134} = 94.7\%$	
Step 4	$\frac{\text{BCG Slope Target - Adjusted}}{(1 + \text{Proportion of Target-to-Suitor})}$	$94.7\% - \frac{1}{(1 + 0.5)}$	= 84.1% Marginal Scale Effect Applied to Figure 7
	Proportion of Target to Combined Health Plan	0.5 / 1.5	

The phrase "BCG Slope" reflects the case where the target is the same size as the suitor.  
 The "Target-Adjusted BCG Slope" accommodates the cases in which other sizes are contemplated.

## Other Observations

**Diseconomies of Scale.** In the Blue Cross Blue Shield set, no functions saw costs increase with scale. For IPS plans, only the function of Health and Wellness exhibited diseconomies of scale. For the combined set, External Broker Commissions, Health and Wellness, and Outside Litigation exhibited diseconomies of scale. We do not know why certain costs tended to increase with membership but it is possible that they reflect strategic investments in growth, membership retention and challenges associated with greater market share.

**Qualifications.** We are analyzing the experience of firms of various sizes to estimate scale, and the intent of this study is to provide information to health plans as they consider their individual strategic situations. One qualification to the results is that each firm operates differently and in different competitive environments, so that differences between firms that we attribute to scale may also stem from other factors. For instance, larger organizations may operate in service areas that have competitive environments that affect costs independently of the technical and administrative economies of scale.

Also, the size of the organizations may establish the bounds for which the conclusions are reliable. For instance, we suspect that organizations smaller than plans reflected here would have steeper declines in costs as they grow.

<b>Figure 7. Economies of Scale</b>						
Scalability For Firms of Different Sizes						
Combined BCBS and IPS Plans' Slopes						
<b>Assumptions</b>	Suitor	Target	Effect of Scale On Target	Target After Scale	Combined After Scale	
Members	1,000,000	500,000		500,000	1,500,000	
Revenues PMPM	\$490	\$490		\$490	\$490	
Health Benefit Ratio	86.0%	86.0%		86.0%	86.0%	
Administration/Premium	11.2%	11.2%	-0.6%	10.7%	11.0%	
Total Administration PMPM	\$55.00	\$55.00		\$52.22	\$54.07	
Scale Effect						84.1%
Scalable Proportion of Administration	31.8%	31.8%		31.8%	30.7%	
Scalable Administration/Premium	3.6%	3.6%		3.0%	3.4%	
Scalable Administration PMPM*	\$17.50	\$17.50		\$14.72	\$16.57	
Scalable Administration	\$210,001,838	\$105,000,919	-\$16,657,762	\$88,343,157	\$298,344,995	
Non Scalable Administration/Premium	7.7%	7.7%		7.7%	7.7%	
Non Scalable Administration PMPM	\$37.50	\$37.50		\$37.50	\$37.50	
Non Scalable Administration	\$449,998,162	\$224,999,081		\$224,999,081	\$674,997,243	
<b>Income Statements</b>	Suitor	Target	Effect of Scale	After Scale	Combined	
Revenues	\$5,880,000,000	\$2,940,000,000	\$0	\$2,940,000,000	\$8,820,000,000	
Health Benefits	5,056,800,000	2,528,400,000	0	2,528,400,000	7,585,200,000	
Administration	660,000,000	330,000,000	-16,657,762	313,342,238	973,342,238	
Operating Profits	\$163,200,000	\$81,600,000	\$16,657,762	\$98,257,762	\$261,457,762	
Operating Margin	2.8%	2.8%	0.2%	3.3%	3.0%	

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## *Closing Thoughts*

We sometimes face skepticism concerning our conclusions of limited economies of scale. Many other industries such as manufacturing, transportation and farming are known to enjoy these economies. In the health care sector of the economy, hospitals, like hotels, also exhibit economies of scale which is why occupancy rates are an indicator of profitability in both sectors.

An intuitive way of considering economies of scale is to consider the actual activities of health plans and how they are executed. Many of the activities that health plans perform grow with volume, such as customer service inquiries, processing manual claims and processing enrollment transactions. When a plan adds more members, each new member requires the same services as all previous members. Other functions may also be linked to volume, though more loosely, like the Provider Network Management and Services function and Information Systems. Even the few areas that appear fixed can increase with the size of the plan. While Corporate Executive and Governance would be expected to be relatively fixed, the numbers of support staff, compensation and the enterprise-wide consulting usually grouped in that function can increase in larger organizations.

Moreover, the technical economies of scale, such as those discussed at the beginning of this analysis, may at the same time give rise to higher costs that partially offset the advantage. Suppose the investment in claims autoadjudication achieves its objective of reducing the need process claims manually and associated staff. This success will nevertheless not entirely eliminate claims processors. It may well be that the claims beyond the capability of the autoadjudication system are more complex, and therefore require greater effort and knowledge than the average claim. This more esoteric claims processing activity would need the expertise of higher level, better paid, claims processors, which could offset the advantage of reduced staffing. This paradox may occur in many activities that health plans increasingly automate.

Another intuitive way of thinking about economies of scale is to compare costs across the actual industry structure. Consider the vast size differences between organizations providing health coverage. They range from UnitedHealth, at 53 million members and \$345 billion in annualized revenues, to organizations that serve only tens of thousands of members. UnitedHealth's annual administrative expense ratio was about 8.5% in its most recent quarter, not dissimilar to the much smaller companies analyzed here. UnitedHealth and these smaller companies coexist in a low margin competitive market: the fact of numerous competitors of a wide range in size argues against overstating the significance of advantages stemming from scale.

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## *Background on the Sherlock Benchmarks*

This analysis is of data drawn from the 26th Annual *Sherlock Benchmarks*, which reflects calendar year 2022 results. In most cases, survey materials were distributed in February, collected in April, validated in May and published beginning in June. Plans report costs to us segmented by product. This allows us to compare the plans after the effect of mix adjustments. Collectively, the total participating plans served about 64 million people.

The *Sherlock Benchmarks* themselves can be licensed. There is a cost and a license agreement to access the Reports.

In 2024, we will conduct our 27th annual Benchmarking Study for health plans and will reflect 2023 calendar year results. The Reports provided to participants are identical to licensed copies, plus we provide additional customized Reports that compare each plan to its peer group. We welcome Blue Cross Blue Shield Plans, Independent / Provider – Sponsored plans, Medicaid plans, Medicare plans and other plans.

The schedule should be similar to that of the 2023 cycle described above. In the next two weeks, plans that we understand to have an interest in participating will receive an invitation including summary of our progress in 2023 and our intentions for 2024. *You will be among good company.*

Please do not hesitate to contact us with questions concerning this analysis, the *Sherlock Benchmarks* on which it is based or your interest in licensing or participating in the *Sherlock Benchmarks*. We can be reached at [sherlock@sherlockco.com](mailto:sherlock@sherlockco.com) or (215) 628-2289.

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