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## *Background: Short-Term and Long-Term Scale*

Economies of scale are understood to be the relationship between volume, unit prices, variable costs and fixed costs. Participants in an industry with minimal variable costs and high fixed costs are subject to economies of scale since, at a given price and contribution margin, additional volume yields sharply increased profits since most of the costs are fixed. That the concept is so important to financial analysts is evidenced by the analysts' warhorse, the cost-volume-profit analysis.

In determining whether costs are fixed or variable, the period in which performance is measured is an important consideration: nearly all costs are variable over twenty years, nearly all costs are fixed over one day. For health plans, approximately one-half of costs are staffing, which can be "right-sized" relatively rapidly, though not instantly. The accounting treatment of health plan facility costs, however, typically reflects a duration of 6-9 years while the duration for information systems costs is 2-3 years.

Thus, a health plan could display economies of scale during the short term but not over the long term. For example, suppose a health plan builds an infrastructure sufficient for an expected volume of members. The infrastructure includes information systems, customer service representatives, case managers and so forth. That capacity is based on careful observations of frequency of calls per member, how many members will be ill enough to require case management services and what proportion of claims can be expected to be autoadjudicated. Over a single year, investments in these areas are at least "sticky" if not fixed: employees are hired and processes established assuming a volume of members and their underlying service requirements.

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**Figure 2. Short Term Economies of Scale**  
Rate of Membership Growth and PMPM Cost Growth, by Cluster

<b>Function</b>	<b>R-Squared</b>	<b>Slope*</b>	<b>P-Value</b>	<b>Number of Plans</b>
Sales and Marketing	25.0%	-0.42	0.013	24
Medical and Provider Management	16.0%	-0.34	0.053	24
Account and Membership Administration	1.1%	0.07	0.623	24
Corporate Services	17.5%	-0.33	0.042	24
Account and Memb. Admin. plus Corporate Services	0.3%	-0.04	0.802	24
Subtotal	10.3%	-0.17	0.126	24

\*Slope here represents the percentage point change in expense growth for every percentage point increase in membership growth. For example, suppose a plan has 5% membership growth in year 1 with 10% Sales and Marketing cost growth. If in year 2 the plan increases its membership growth rate 1 percentage point to 6%, from the above, it can expect its Sales and Marketing cost growth to decline by 0.42 percentage points to 9.58%.

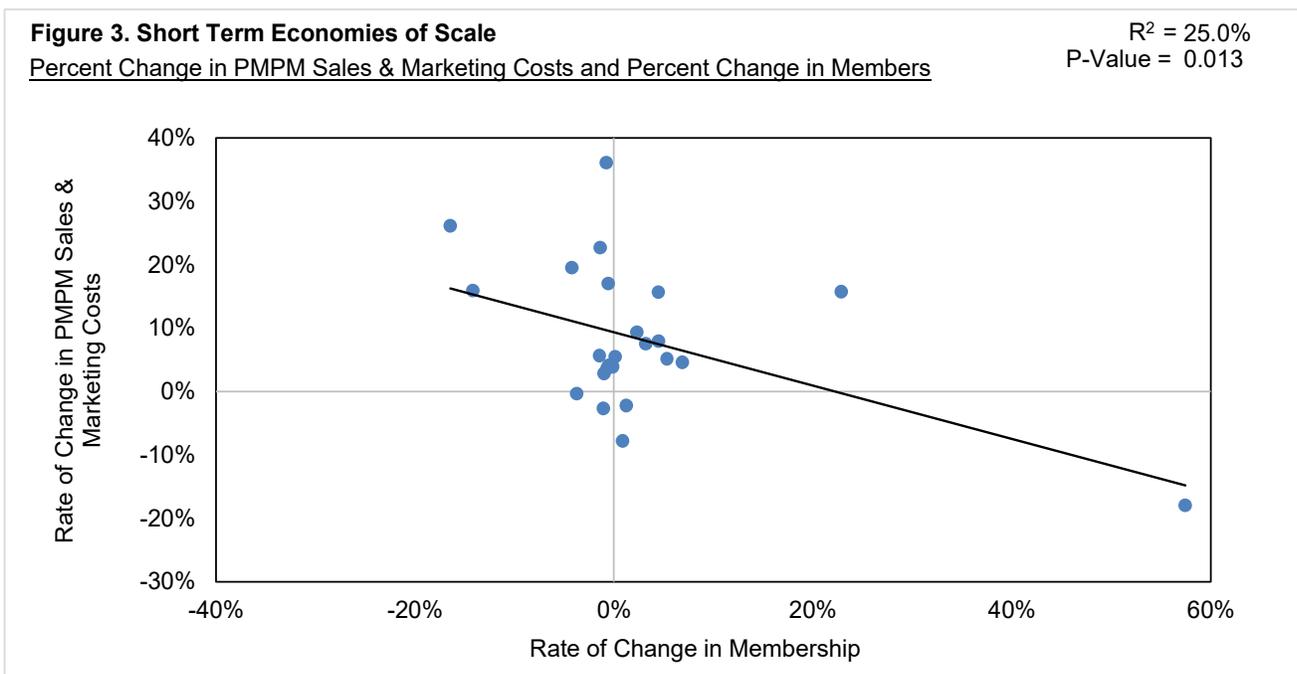
While investments are largely within their control, managers never fully manage the actual volume of members they serve because they cannot control (or even estimate with precision) the pricing and other competitive behaviors of industry rivals. Health plans' inability to adjust costs for actual versus estimated volumes can mean that costs that are variable over the intermediate term can behave like fixed costs in the short term.

Moreover, it seems likely that the greater the change in membership, the less likely that the change has been anticipated in time to adapt to it. The differences between the careful modeling of membership needs and the actual results affects per member costs. Thus, this short duration time-series analysis can measure short-term scale.

By contrast, measuring scale at a single point in time ignores the effect of changes in membership. Since change of membership is not considered, only the actual scale is the focus of such a cross-sectional analysis. This impact of scale may or may not be diluted by the past experience of unexpected membership changes in the plans. It may also be the case that those unfulfilled expectations are countervailing, making cross-sectional analyses of the cost-membership relationship effectively a measure of long-term scale. We have found that only a minority of health administrative expenses are subject to scale.

Point in time scale studies are the most commonly performed by Sherlock Company. Past years' studies are available in past editions of *Plan Management Navigator* and *PULSE*.

Put a different way, the point in time approach used in the economies of scale study in the previous *Plan Management Navigator* is long term since it doesn't take time into account. The approach considering the rates of change of individual plans is short term since the one year period is specified.



## The Effects of Scale in the Short Term

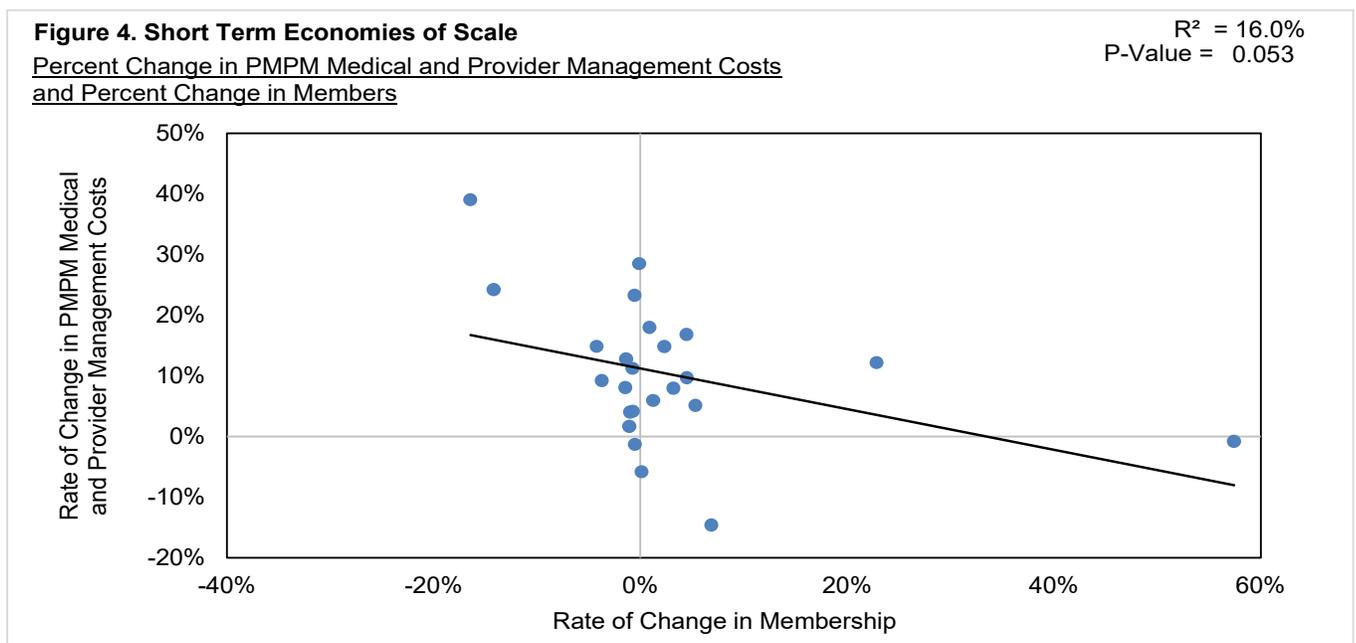
As displayed on the first page, Figure 1 shows the relationship between changes in membership and changes in total administrative costs (“Sub-total”). We exclude the effect of Miscellaneous Business Taxes which are not usually manageable.

At a P-Value of 0.126, the modeled relationship between the trends is only 12.6% likely to be the result of chance, specifically the chance that the sample analyzed is unrepresentative of the population as a whole. The phrase “statistically significant at the 5% level” means that the P-Value is above that percent. The 5% threshold is common in social sciences, and we have customarily used a more aggressive 10% (P-Value of 0.100) threshold to cast a wide net for economies of scale.

The  $R^2$  of 10.3% means that the modeled relationship between membership and cost growth, represented by the regression line, explains that percent of the difference between the two variables.

Note that, throughout this analysis, we have divided the calculated slope by 100. Since we are dealing with membership growth rates, the calculated slope yields values higher than in practice. For example, total administrative costs have a calculated slope of negative 17 percentage points. This means that for every 100 percentage point increase in membership growth, the per member cost growth would decline by 17 percentage points.

Since such an increase in membership is unlikely, dividing by 100 yields more familiar results. In this case, we report the slope as 0.17 percentage points, which means that for every 1 percentage point increase in membership growth, cost growth would decline by 0.17 percentage points (pp). See the notes in Figures 2 and 6 for examples.



## Growth and Clusters of Expenses

As shown in Figure 2 on page 2, the Sales and Marketing cluster has a P-Value that achieves our threshold for statistical significance, at 0.013 and a  $R^2$  of 25.0%. The other expense clusters of Medical and Provider Management and Corporate Services also exhibited statistically significant relationships between membership growth and cost trends. The Medical and Provider Management cluster yielded a P-Value of 0.053 and an  $R^2$  of 16.0%, while the Corporate Services Cluster's P-Value was 0.042 and  $R^2$  was 17.5%. The largest expense cluster, Account and Membership Administration, did not exhibit a statistically significant relationship.

The regression between the rate of change in Sales and Marketing Cluster expenses and Membership growth can be seen in Figure 3, on page 3. This cluster is comprised of the Rating and Underwriting, Marketing, Sales, External Broker Commissions and Advertising and Promotion functional areas.

The only Sales and Marketing function that displayed a significant relationship was the Sales function. The Sales function had a P-Value of 0.006 with a  $R^2$  of 29.5%. The slope for Sales implies that the rate of change in cost trends would fall 0.85 pp for every 1 percentage point increase in membership growth. The other functions also had negative slopes to their regression analyses, but no other function in the Sales and Marketing cluster was significant.

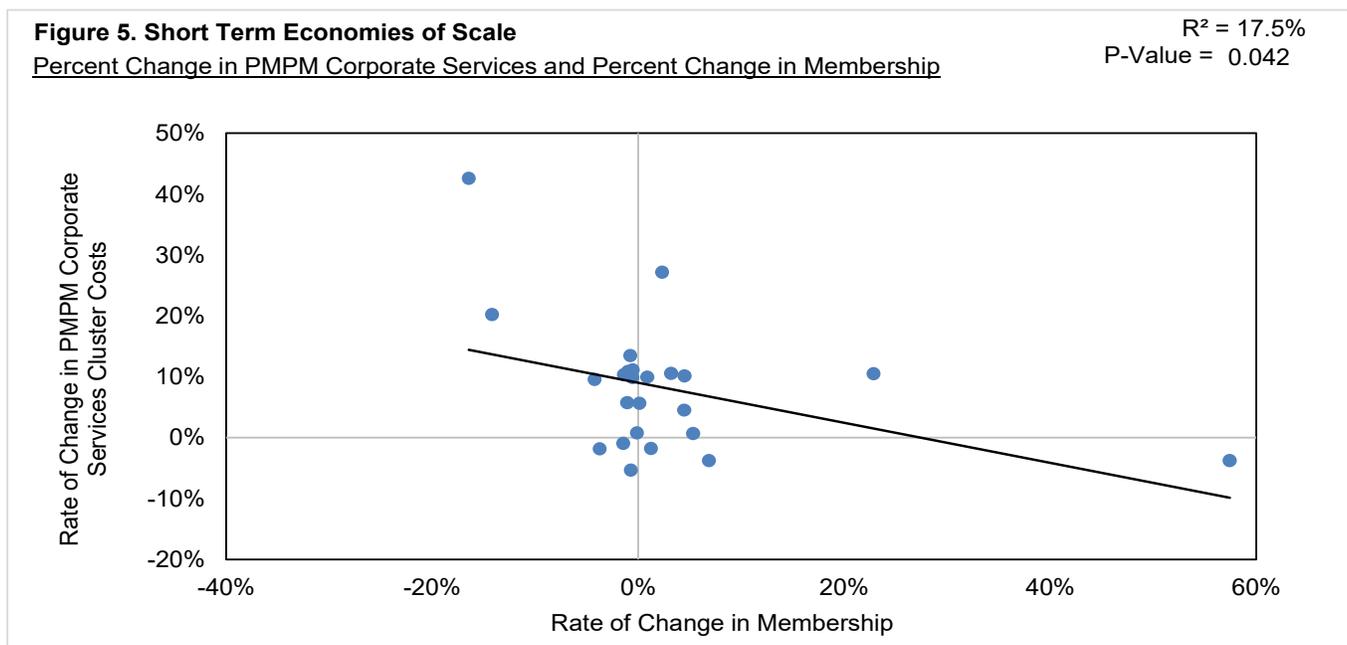


Figure 4 on page 4 shows the regression between the rate of change in Medical and Provider Management cluster and Membership growth. This cluster is comprised of the functions of Provider Network Management and Services and Medical Management. Neither function displayed a statistically significant relationship with membership growth, but Provider Network was close at a P-Value of 0.117. Medical Management had a P-Value of 0.534. Both functions yielded negative slopes.

The regression for the rate of change in Corporate Services cluster and Membership growth is displayed in Figure 5 on the previous page. Three of the five functions within this cluster yielded statistically significant relationships with Membership growth and includes Actuarial, Corporate Executive and Governance, and Association Dues and License/Filing Fees.

The regression with Actuarial resulted in a 0.026 P-Value and an R<sup>2</sup> of 20.6%. Corporate Executive and Governance yielded a 0.037 P-Value and an R<sup>2</sup> of 18.3%. Associate Dues and License / Filing Fees had a P-Value of 0.068 and an R<sup>2</sup> of 14.3%.

### *Growth and Clusters of Expenses*

Of the 16 functions, five showed cost trends that had a statistically significant relationship with growth, shown in Figure 6 below. Most of the functions had negative slopes, except for Information Systems and the Corporate Services Function.

**Figure 6. Short Term Economies of Scale**  
Rate of Membership Growth and PMPM Cost Growth, by Function

Function	R-Squared	Slope*	P-Value	Number of Plans
1. Rating and Underwriting	7.6%	-0.91	0.191	24
2. Marketing	8.7%	-0.57	0.163	24
3. Sales	29.5%	-0.85	0.006	24
4. External Broker Commissions	1.9%	-0.11	0.522	24
5. Advertising and Promotion	0.5%	-0.64	0.746	24
6. Provider Network Management and Services	10.8%	-0.83	0.117	24
7. Medical Management / Quality Assurance / Wellness	1.8%	-0.13	0.534	24
8. Enrollment / Membership / Billing	0.0%	-0.01	0.973	24
9. Customer Services	7.5%	-0.27	0.196	24
10. Claim and Encounter Capture and Adjudication	14.3%	-0.41	0.069	24
11. Information Systems Expenses	5.8%	0.34	0.255	24
12. Finance and Accounting	1.6%	-0.20	0.553	24
13. Actuarial	20.6%	-0.91	0.026	24
14. Corporate Services Function	7.4%	0.25	0.197	24
15. Corporate Executive & Governance	18.3%	-1.19	0.037	24
16. Association Dues and License/Filing Fees	14.3%	-0.62	0.068	24
Subtotal	10.3%	-0.17	0.126	24

\*Slope here represents the percentage point change in expense growth for every percentage point increase in membership growth. For example, suppose a plan has 5% membership growth in year 1 with 10% Actuarial cost growth. If in year 2 the plan increases its membership growth rate 1 percentage point to 6%, from the above, it can expect its Actuarial cost growth to decline by 0.91 percentage points to 9.09%.

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Cost growth in the Account and Membership Administration Cluster related to membership growth did not yield a significant relationship. The Claims function, however, yielded a significant relationship with a P-Value of 0.069 and R<sup>2</sup> of 14.3%.

The Account and Membership Administration is comprised of activities that are central to health plan operations and represents approximately 40% of total expenses. Information Systems is the largest function within this cluster, but did not yield a significant relationship. Its P-Value was 0.255 with a R<sup>2</sup> of 5.8%. This function exhibited *diseconomies* of scale, or costs growth accelerating with an increase in membership, with a positive slope of 0.34.

### *How We Performed this Study*

This is a time-series study of the effect of a one-year change in membership on a one-year change in per member costs. Plans reported costs to us segmented into 16 principle functions. Total costs, all four clusters of costs and each of the functions were separately analyzed. Of the 32 combined Blue Cross Blue Shield and IPS participants, we used 24 plans for this *Navigator* analysis that participated in both the 2019 and 2020 benchmarking cycles. Their size ranged from high tens of thousands to millions of members, so these relationships are free of the high costs and explosive membership growth of start-ups.

Unlike most of our long-term economies of scale studies, we did not adjust to eliminate the effect of product mix differences between the years. While each plan differs, perhaps greatly, in their product mix, the year over year differences in any given plan's product mix is more modest. Though we routinely calculate cost growth eliminating the effect of product mix, there was no satisfactory way of eliminating the effect of product mix from membership growth. Accordingly, when we calculate changes for each of the 24 plans in this analysis, neither changes in membership nor costs eliminate the effect of product mix differences between the two years.

### *For Further Information*

We hope that you won't hesitate to reach out to us concerning this article.

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## *Appendix A: Functions Included in Each Administrative Expense Cluster*

The 16 main functional areas of administrative expenses used in our benchmarking study are grouped into four clusters to gain an overall perspective. Most of the functions have sub-functions. When totaled, there are 60-70 functions and subfunctions into which each plan segments administrative costs. They are grouped as shown below. Miscellaneous Business Taxes are excluded from the Corporate Services cluster for the purposes of this analysis. Subcategories of functions are also omitted.

### **Sales and Marketing**

- Rating and Underwriting
- Marketing
- Sales
- External Broker Commissions
- Advertising and Promotion

### **Medical and Provider Management**

- Provider Network Management and Services
- Medical Management / Quality Assurance / Wellness

### **Account and Membership Administration**

- Enrollment / Membership / Billing
- Customer Services
- Claim and Encounter Capture and Adjudication
- Information Systems Expenses

### **Corporate Services Cluster**

- Finance and Accounting
- Actuarial
- Corporate Services Function
- Corporate Executive and Governance
- Association Dues and License/Filing Fees

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## INVITATION TO PARTICIPATE IN THE 2021 SHERLOCK BENCHMARKING STUDY

The highly valid, well-populated *Sherlock Benchmarks* provide an unbiased ranking and helps prioritize cost management activities to have the greatest impact on improving your health plan's overall operating performance. The combination of the Affordable Care Act and the effects of COVID-19 may make participation by your health plan an appropriate and necessary response to the strong incentives to cost efficiency.

With cumulative participation of 893 health plan years, health plans serving almost 180 million insured Americans are licensed users of the *Sherlock Benchmarks*. Of the 34 U.S.-based Blue Cross Blue Shield primary licensees, 19 Plans serving approximately 50 million people participated in the 2020 edition of the *Sherlock Benchmarks* for Blue Cross Blue Shield Plans.

The *Sherlock Benchmarks* have been called the "Gold Standard" by leading health care consultants. Besides **Blue Cross Blue Shield** Plans, our universes include **Independent/Provider-Sponsored** health plans, **Medicare** and **Medicaid** plans.

Report publication begins in late June but varies by universe. Participation entails efforts on your part since useful outputs require relatively granular inputs. However, the cost is relatively modest.

The *Sherlock Benchmarks* are also available to license. Please reach out to Douglas Sherlock at [sherlock@sherlockco.com](mailto:sherlock@sherlockco.com) or 215-628-2289 if you are interested in either participation or licensing. *You will be among good company.*

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