

Plan Management Navigator

Analytics for Health Plan Administration



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SHORT-TERM ECONOMIES OF SCALE: GROWTH IN MEMBERSHIP AND HEALTH PLAN ADMINISTRATIVE COSTS

Conventional wisdom holds that there are administrative economies of scale in health insurance. This can certainly be a manager's experience when volume unexpectedly surges or declines. Also, if other industries experience economies of scale, doesn't it stand to reason that health plans should too?

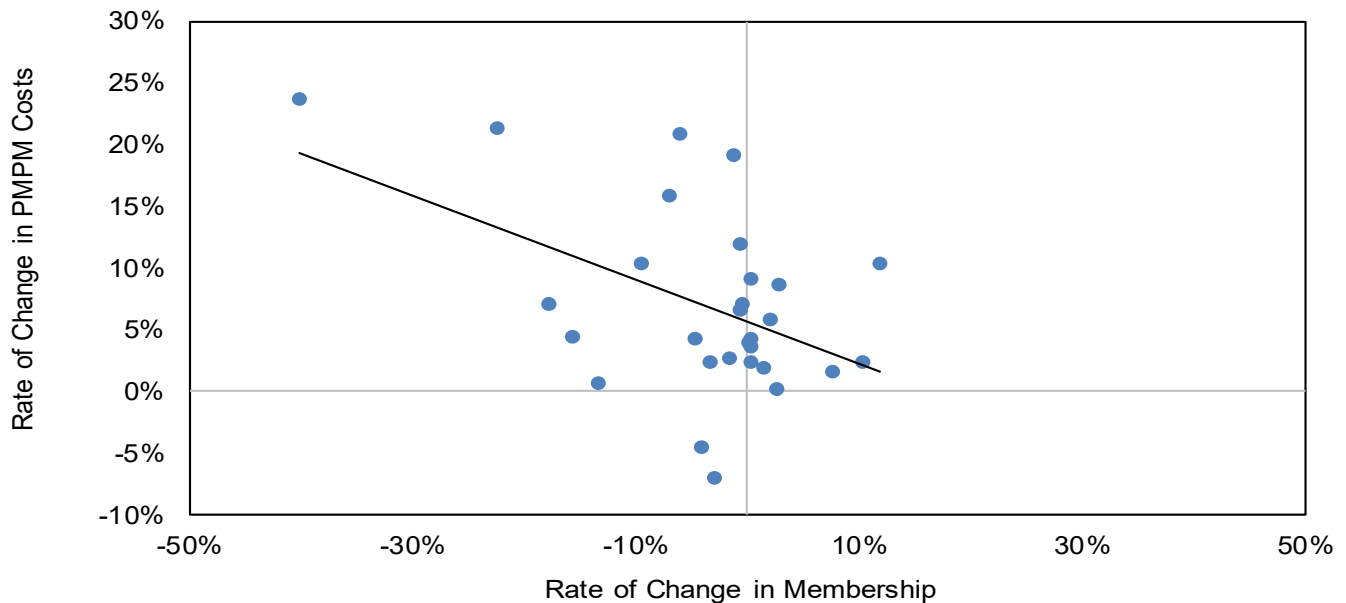
This analysis explores the first source of conventional wisdom: the relationship between short-term health plan membership growth and cost trends. As we discuss below, many functions display a relationship in which as membership grows, costs decline. The behavior of total expenses, shown below, illustrates this.

Note that the question of short-term economies of scale differs from the relationship between size of health plans and their costs in a single, annual period. Such an analysis ignores the effect of growth on costs. Instead, this edition of *Plan Management Navigator* is based on rates of change in membership between two periods, ignoring the effect of actual plan size.

Figure 1. Short Term Economies of Scale

Total Expenses

$R^2 = 22.5\%$
p-value = 0.94%



Background: Short-Term and Long-Term Economies of 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 this 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. Other resources take longer to adapt to scale changes: the accounting treatment of health plan facility costs typically reflects a duration of 6-9 years and 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 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.

As a result, managements carefully consider their assumptions about the requirements of each member since they bear on customer satisfaction and are sometimes even codified by benefit plan sponsors as performance standards. Managers accordingly invest in resources with a certain number of members in mind. But they have much less ability to manage for the volume of members they actually serve because they cannot control (or even estimate with precision) the pricing and other competitive behaviors of industry rivals. For that reason, it is improbable that health plans can estimate the number of members served with perfect accuracy. It also seems likely that the greater the change in membership, the less likely it is to have been anticipated in time to adapt to it.

Health plans' inability to *manage* 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. A short duration time-series analysis, such as the subject of this analysis, can measure short term scale.

By contrast, measuring scale effects at a single point in time ignores the impact of changes in membership. Since change of membership is not considered, the only 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, using a cross-sectional analysis, only a minority of health administrative expenses are subject to scale.

Scale studies of the latter kind are the most commonly performed by Sherlock Company. Past years' studies are available in past editions of *Plan Management Navigator* and *PULSE*. We expect to publish a new cross-sectional study of long-term scale in the next month.

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. We exclude the effect of Miscellaneous Business Taxes which are not usually manageable.

At a p-value of 0.009, the modeled relationship between the trends is only 0.9% likely to be the result of chance, specifically the chance that the sample analyzed is unrepresentative of the population as a whole. The common phrase "statistically significant at the 5% level" means that the p-value is below 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 22.5% means that the relationship between growth and costs explains that percent of the difference between the 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 an order of magnitude higher than in practice. For example, total administrative costs have a calculated slope of negative 34.0 percentage points. This means that for every 100 percentage point increase in membership growth rate, the per member cost growth would decline by 34.0 percentage points.

Since a 100% increase in membership is rare, dividing by 100 yields more familiar results. In this example, we report the slope as 0.34 percentage points, which means that for every 1 percentage point increase in membership growth, cost growth would decline by 0.34 percentage points (pp). The ratio of change in membership growth to change in costs is the same as the original calculation but the expression of the slope is more intuitively appealing in light of actual health plan experience. See the notes in Figures 2 and 4 for examples.

Growth and Clusters of Expenses

As shown in Figure 2, both Sales and Marketing and Account and Membership Administration have p-values that achieve our threshold for statistical significance, at 0.071 and 0.022 respectively. Account and Membership Administration is notable in its much steeper slope of -0.51 pp versus -0.34 pp for Sales and Marketing. Its R² is higher at 17.9%.

Neither Corporate Services nor Medical and Provider Management showed a statistically significant relationship between growth and cost trends.

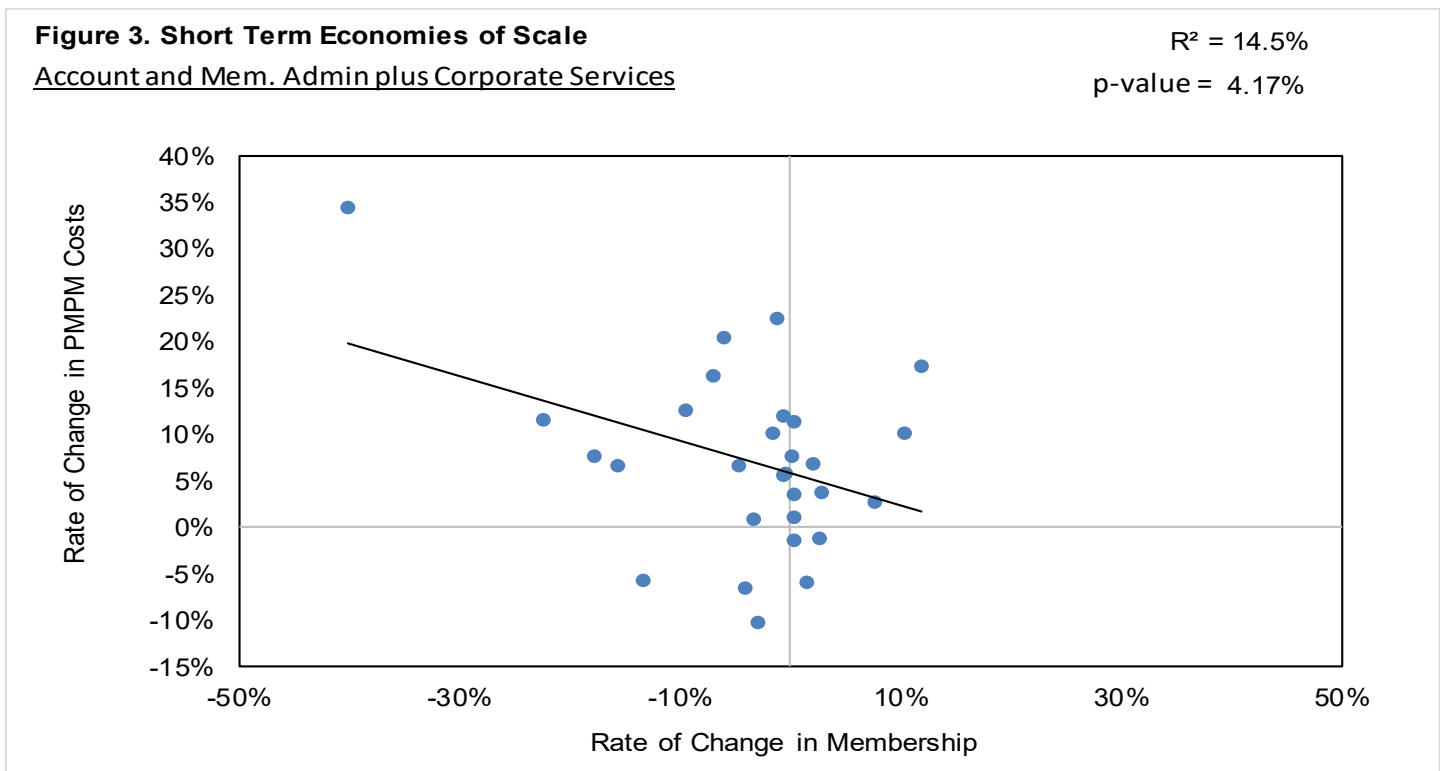
Figure 2. Short Term Economies of Scale

Rate of Membership Growth and Cluster PMPM Cost Growth

Function	R-Squared	Slope*	p-value	Number of Plans
Sales and Marketing	11.5%	-0.34	7.1%	29
Medical and Provider Management	3.2%	-0.18	35.5%	29
Account and Membership Administration	17.9%	-0.51	2.2%	29
Corporate Services Cluster	0.3%	-0.06	78.8%	29
Account and Mem. Admin plus Corporate Services	14.5%	-0.35	4.2%	29
Total Expenses	22.5%	-0.34	0.9%	29

*Slope here represents the percentage point change in per member expense growth for every percentage point increase in membership growth. For example, suppose in a given year, health plans typically experience 5% membership growth and 5% Account and Membership per member cost growth. If, in that year, one plan has membership growth that is 1 percentage point higher, or 6%, it can expect its Account and Membership cost growth to be less by 0.51 percentage points, or 4.49%.

We were interested to see that Corporate Services costs, when grouped with Account and Membership Administration had a statistically significant negative slope of 35 pp. Though two of the four functions in the Corporate Services cluster, Finance and Accounting and Actuarial, evidence economies of scale (Please see Figure 4 and Appendix B), we suspect that this reflects the greater size of the Account and Membership Administration cluster, which is more than twice the size of the Corporate Services cluster. To a lesser degree, this may also reflect the reporting of project costs which may be found in Corporate Executive and Governance or Information Systems, depending on the cross-functional breadth of any process changes.



Growth and Expense Functions

Of the 15 measured functions, six showed cost trends that had a statistically significant relationship with growth. All the significant functions had negative slopes, except for Actuarial.

While cost growth in the Account and Membership Administration Cluster related to membership growth, only the costs of its Information Systems function did. Information Systems is by far this cluster's largest function and so drove this. With an R² of 18.6%, this function followed only Sales and Rating and Underwriting in the explanatory power of the membership - cost change relationship.

Sales and Marketing had most of the significant negative relationships. Rating and Underwriting, Marketing and Sales were strongly linked to growth, while Commissions and Advertising and Promotion were not. Recall that the cluster itself also displayed a significant relationship with growth.

Figure 4. Short Term Economies of Scale

Rate of Membership Growth and Function PMPM Cost Growth

Function	R-Squared	Slope*	p-value	Number of Plans
1. Rating and Underwriting	19.6%	-1.76	1.6%	29
2. Marketing	16.0%	-0.98	3.1%	29
3. Sales	23.4%	-0.65	0.8%	29
4. External Broker Commissions	3.0%	0.25	36.8%	29
5. Advertising and Promotion	0.3%	-1.47	76.4%	29
6. Provider Network Management and Services	8.2%	-0.61	13.2%	29
7. Medical Management / QA / Wellness	1.7%	-0.16	49.8%	29
8. Enrollment / Membership / Billing	3.7%	-0.33	31.5%	29
9. Customer Services	6.0%	-0.50	20.0%	29
10. Claim and Encounter Capture and Adjudication	6.0%	-0.71	19.9%	29
11. Information Systems Expenses	18.6%	-0.69	1.9%	29
12. Finance and Accounting	17.3%	-0.95	2.5%	29
13. Actuarial	14.2%	0.97	4.4%	29
14. Corporate Services Function	0.0%	0.02	94.9%	29
15. Corporate Executive & Governance	1.7%	0.67	50.4%	29
Total Expenses	22.5%	-0.34	0.9%	29

*Slope here represents the percentage point change in per member expense growth for every percentage point increase in membership growth. For example, suppose in a given year, health plans typically experience 5% membership growth and 5% Finance and Accounting per member cost growth. If, in that year, one plan has membership growth that is 1 percentage point higher, or 6%, it can expect its Finance and Accounting cost growth to be less by 0.95 percentage points, or 4.05%.

The negative relationship between differences in Sales and Marketing cost growth and differences in membership growth may stem from the fact that many of the costs are, over the short term, only partially associated with membership trends. For instance, for Blue Cross Blue Shield plans, internal commissions (presumably linked to growth) represents only 14% of the Sales function costs.

Although the changes in the costs of the Corporate Services cluster did not have a significant relationship with membership growth, functions Finance and Accounting and Actuarial did. Interestingly, while Finance and Accounting displayed a slope indicating that the faster its membership growth, the greater its cost growth is diminished, Actuarial showed the opposite. In other words, the faster membership grew, the faster Actuarial costs increased.

Like its cluster, neither of the underlying functions in the Medical and Provider Management Cluster had a significant relationship between cost and membership growth. While the Medical Management relationship had the third highest p-value, that of Provider Network Management and Services had a p-value of 0.132, near significance by our generous threshold.

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 15 principle functions. Total costs, all four clusters of costs and each of the functions was separately analyzed.

There were 29 plans included in the analyses in this *Navigator*. These were Independent/Provider-Sponsored and Blue Cross Blue Shield plans and they participated in the Sherlock Benchmarks during both 2017 and 2018 cycles. Their size ranged from 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. While we routinely calculate cost growth after 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 29 plans in this analysis, neither changes in membership nor costs eliminate the effect of product mix differences between the two years.

Note

We hope that you won't hesitate to reach out to us concerning this article. Also, we will be updating our annual long-term economies of scale study in coming weeks.

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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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