

Cost is not a four-letter word: focus on what you can change



Jeffrey S. Hoch, PhD, and Carolyn S. Dewa, MPH, PhD

Hoch JS, Dewa CS. Cost is not a four-letter word: focus on what you can change *Can J Physician Leadersh* 2024;10(2):64-68
<https://doi.org/10.37964/cr24783>

In this second article in a series on health economics, we focus on cost concepts that are important for leaders who must decide how to spend scarce organizational resources like time and money. Building on the first article's focus on efficiency, this article delves into the important ideas of expected, fixed, variable, and marginal costs. Knowledge of these types of costs can help leaders successfully identify optimal courses of action. An understanding of these concepts can also help leaders communicate.

KEY WORDS: leadership, costs, efficiency, health economics

The difference between physicians and physician leaders is the number of patients being treated at any one time. A waiting room may be filled with patients, but an examining room only holds one patient. Physicians consider the best course of treatment for the patient before them using their real-world expertise, their patient's preferences, and research evidence (see Table 1 in Schlegl et al.¹). In contrast, physician leaders are responsible for the groups they lead. Their choices and policies affect everyone in the group; their focus is not on one individual. In

a way, leaders "treat" the groups they lead. What is sacrificed to make one individual better off must be considered from the perspective of the group or "population." When leaders use data to inform their decisions, they keep track of the sacrifices related to the different options with information called "costs." These costs help clarify the sacrifices attending the decisions.

In this article, we describe various types of costs to offer physician leaders insights as they consider (or reconsider) their relationship with costs.

Understanding "cost"

A major misconception about cost is that it is merely a gauche monetary concept. In fact, there are many different types of costs that leaders must be aware of: reputational costs, time costs, and costs related to energy or effort. If you are a leader responsible for the stewardship of scarce resources – from beds, to nurses, to MRIs – the use of these scarce resources represents a cost for which you are responsible. In this article, we describe different costs and explain how leaders can avoid common mistakes related to them.

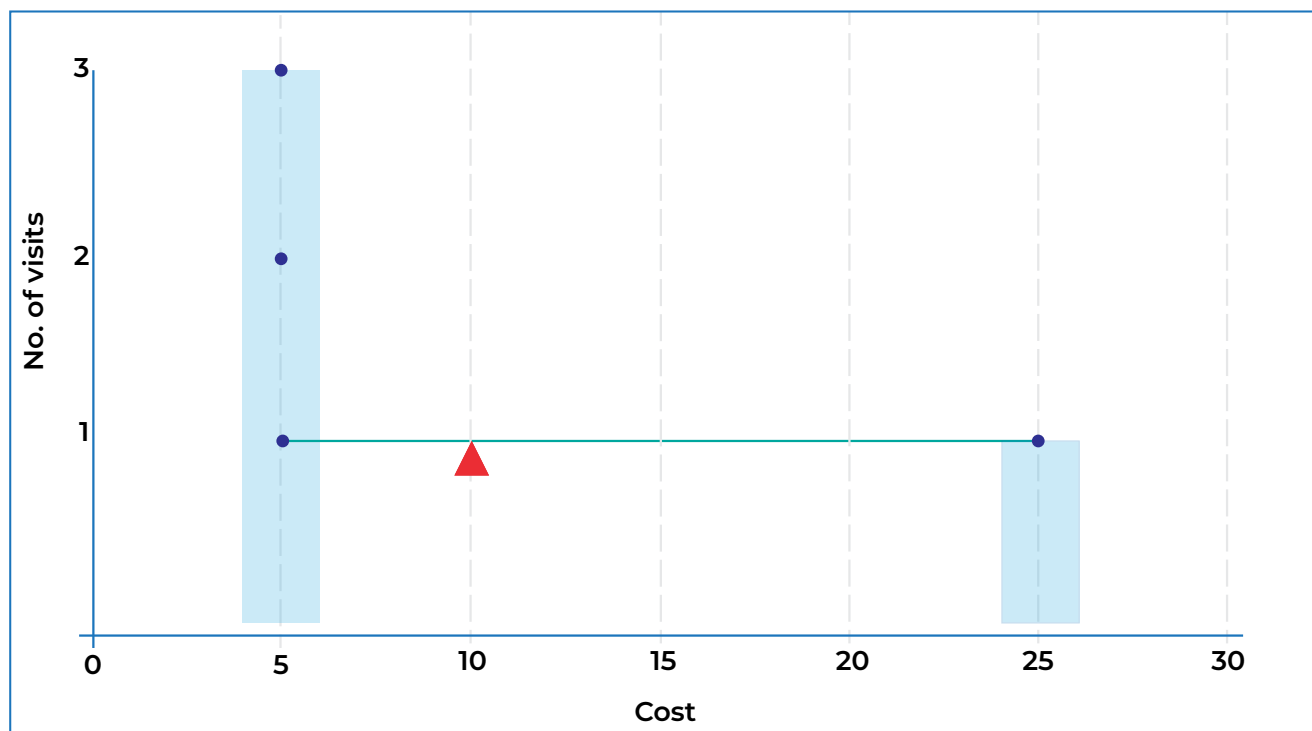
Expected or average costs

Expected cost is the average cost computed by taking the total cost and dividing it equally. For example, if your division generated overall costs of \$40 in providing four visits, then the average or expected cost for each visit is \$10. However, among the four visits, none may have cost the expected \$10. Some visits may have been more than \$10 and some less; overall, the entire set of visits cost \$40. Spreading that cost equally over all four visits gives an expected cost of \$10 per visit.

Figure 1 illustrates the four visits described above. With three that cost \$5 each and the remaining one costing \$25; no visit cost \$10. The expected cost is equal to $(\$5 + \$5 + \$5 + \$25)/4$ or \$10. The histogram in Figure 1 shows how the expected cost, indicated at \$10 with a Δ , is like a balancing point. The expected cost is not, "the cost you should expect" per unit.

This can be important for budgeting. If you know the expected cost of providing a service, multiplying it

Figure 1: Costs (\$) for four visits: three visits cost \$5 each and one cost \$25. The expected cost of the four visits is \$10, which can be viewed as a fulcrum or balancing point Δ



by number of visits yields the total cost. This is useful for population-level planning. For example, assuming a new service will provide 600 visits and using the expected cost of \$10 per visit (also assuming costs are not affected by the increase to 600 visits), total costs are expected to be \$6000 (i.e., $600 \times \$10$).

Fixed and variable costs

Fixed costs are the costs you incur even if you do nothing. For example, rent paid each month regardless of how many patients are treated is a fixed cost. Perhaps your organization has a professional on retainer (e.g., a lawyer, a pest removal service, or a health economist) and each month they are paid a fixed amount; that is a fixed cost too. A study published in 1999 found that, “the majority of cost in providing hospital service is related to buildings, equipment, salaried labor, and overhead, which are fixed over the short term.”²

In contrast, *variable costs* change because they are dependent on the number of visits provided. The Conference Board of Canada studied healthcare cost drivers in Canada before and after COVID-19.³ The report gives two examples where fixed costs would be larger than variable costs: “technology

enhancements needed to support telehealth or virtual healthcare during the pandemic”; and “costs incurred to prepare hospitals and emergency rooms to handle COVID-19 cases” (page 35 of the Conference Board report).

Conversely, the Conference Board of Canada’s COVID cost report³ also noted examples where the variable costs were greater than fixed costs. The variable costs of COVID to organizations were dependent on the volumes and types of drugs and pharmaceuticals and personal protective equipment used (page 35 of the Conference Board report). This makes sense because, as more visits are used, visit cost should increase.

Using cost concepts

Table 1 provides data to help a leader decide the number of visits to provide. When there are no visits, fixed costs are \$6. With each visit, costs increase by a variable amount. Total cost is the sum of variable and fixed cost. When the number of visits increases from 0 to 1, total cost increases from \$6 to \$10. This change in total cost (\$4) is called marginal cost, the difference in total cost resulting from one more visit. Note, the marginal cost changes depending on the number of

Table 1: How costs and reimbursement (\$) change with increasing number of visits (hypothetical data)

Number of visits	Fixed cost	Variable cost	Total cost	Marginal cost	Total reimbursement
0	6	0	6	–	–
1	6	4	10	4	5
2	6	7	13	3	10
3	6	9	15	2	15
4	6	10	16	1	20
5	6	12	18	2	25
6	6	15	21	3	30
7	6	19	25	4	35
8	6	24	30	5	40
9	6	30	36	6	45
10	6	36	43	7	50

visits; in this example, it ranges from \$1 (when visits increase from 3 to 4) to \$7 (when visits increase from 9 to 10).

In this example, we assume that the reimbursement

about how many visits to “produce.”

If maximizing profit is the goal, none of the Table 2 options achieves that. To maximize profit, the right answer depends on the cost that you can control.

Table 2: The right number of visits

	Manager A	Manager B	Manager C
Answer	0 visits	3 visits	10 visits
Rationale	Fixed cost is more than reimbursement; do not provide any treatments	Average cost equals reimbursement, so no money is lost.	Revenue is highest, so we are taking in the most money we can.

for each visit is \$5. So, how many visits should be provided to maximize the organization’s profit if the marginal revenue from each visit is \$5?

With no visits, the revenue is \$0, but because the fixed cost is \$6, the organization incurs a loss of \$6. For one visit, the loss drops to \$1. Only at three visits does total revenue equal total cost. Subsequently, revenue increases with each visit up to the 10 visits shown.

Table 2 summarizes the opinions of three managers

That is the variable cost (i.e., it changes by an amount equal to marginal cost when you change number of visits). In this example, profits are highest with eight visits. Profit is the highest when extra total cost of one more visit equals the extra reimbursement from that additional visit. In other words, when the marginal cost (\$5) equals marginal revenue (\$5), and this occurs at eight visits. The trick is to realize that fixed cost is something to ignore, as every option has the same fixed cost; thus, it does not bear on the optimal decision since you will always incur fixed costs.

Table 3: How time costs and returns vary with increasing delegation of tasks (hypothetical data)

Number of delegations	Fixed cost	Variable cost	Total cost	Marginal cost	Total return
0	6	0	6	–	–
1	6	4	10	4	5
2	6	7	13	3	10
3	6	9	15	2	15
4	6	10	16	1	20
5	6	12	18	2	25
6	6	15	21	3	30
7	6	19	25	4	35
8	6	24	30	5	40
9	6	30	36	6	45
10	6	36	43	7	50

Each time you increase the number of visits by one, marginal cost changes depending on how much the variable costs change (however, marginal revenue is constant at \$5). It makes sense to stop trying to earn \$5 more when the cost of doing that is \$5 or more. Increasing from 0 to 1 visit costs \$4 more to earn \$5 more. That means a profit of $\$5 - \$4 = \$1$ and it makes sense to make the increase. Going from 3 to 4 visits costs \$1 more to earn \$5 more in revenue. Again, why stop there? However, increasing from 9 to 10 visits costs \$7 more to earn \$5, which does not support “profit maximization,” because, to bring in \$50 of revenue requires paying \$7 more (in extra cost) for something worth \$5 (in revenue gained).

This example highlights the differences between minimization, maximization, and optimization. Total costs are minimized at 0 visits. This is the right focus if there is no broader goal or objective than to cut costs (even at the expense of patient care). In contrast, total revenue is maximized at 10 visits. This makes sense when leaders want to treat as many patients as possible (even if it involves putting their organization at financial risk). Leaders interested in optimizing their objective compare the costs they can control (i.e., marginal costs) with the additional gain (i.e., marginal revenue). Often, the best action is not choosing

the least or the most; cost minimization (0 visits) is different from quantity maximization (10 visits), and both often differ from optimization (e.g., maximum profit).

Non-monetary cost

Now, let’s return to our earlier point that cost is not solely a monetary concept. Imagine you are implementing a new technique and have already invested six hours of time learning it (e.g., attending a training seminar). If you can delegate the task, you can save 5 hours each time you use the technique. However, it takes time to master the technique.⁴ If we use the data in Table 1 where cost now represent hours of your time (Table 3), the fixed cost is the amount of time you invested learning the new way; this is time you will never get back (even if you never use the new skill/technique). The variable cost is the time you spend delegating (e.g., in communicating what you want done). Notice, the total time grows the more you delegate. The “return” is time you get back now that a task taking you 5 hours to complete is delegated to someone else; this is 5 hours per delegation.

If you delegate 10 times, you will spend 43 hours to

save 50 hours. However, if you delegate 8 times, you spend 30 hours and save 40 hours. You are managing your time better if you regain 10 hours by delegating only 8 times. The fact that you have already spent 6 hours learning the technique, does not oblige you to use the technique at all. The key insight is to focus on what you can change, and that is how much time you put into using the technique and the resulting gain (i.e., the time you save).



Conclusion

As a leader, you are a steward of your organization's most precious resources. When you invest them, whether time or money, your choices are important. You purposefully choose to direct resources toward higher value alternatives. Understanding costs

allows you do more with your organization's scarce resources to achieve its goals and fulfill its mission. Expected or average costs are useful for estimating total costs. Fixed costs are less important than variable costs for helping you decide on optimal actions. Fixed costs are "sunk" – once they are committed, there is no changing them, and they cancel out of any analysis. Variable costs are a lever you can change, which makes them worthy of your focus. Marginal cost shows you how variable costs change and can help your organization make optimal decisions. Focusing on the difference in costs (e.g., additional costs) will allow your organization to be efficient.

References

- Schlegl E, Ducournau P, Ruof J. Different Weights of the Evidence-Based Medicine Triad in Regulatory, Health Technology Assessment, and Clinical Decision Making. *Pharmaceut Med*. 2017;31(4):213-6.
- Roberts RR, Frutos PW, Ciavarella GG, Gussow LM, Mensah EK, Kampe LM, Straus HE, Joseph G, Rydman RJ. Distribution of variable vs fixed costs of hospital care. *JAMA*. 1999 Feb 17;281(7):644-9.
- The Conference Board of Canada. Healthcare Cost Drivers in Canada: Pre-and Post-COVID-19. Ottawa: The Conference Board of Canada, 2020. Accessed on June 8, 2024 at <https://tinyurl.com/y9vcvs8z>
- Landry L. How to Delegate Effectively: 9 Tips for Managers. Harvard Business School Online, 2021. Accessed on June 8, 2024 at <https://tinyurl.com/mvzzkd3a>

Authors

Jeffrey S. Hoch, MA, PhD, is a professor in the Department of Public Health Sciences at the University of California Davis (UC Davis). He is chief of the Division of Health Policy and Management and associate director of the Center for Healthcare Policy and Research at UC Davis.

Carolyn S. Dewa, MPH, PhD, is a professor in the Department of Psychiatry and Behavioral Sciences and the Department of Public Health Sciences at UC Davis.

Correspondence to: jshoch@ucdavis.edu