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A DEEP-DIVE PUBLICATION

Do Happy Patients really mean Healthy Profit Margins?

Outside of healthcare, there is an indisputable link between positive customer experiences and excellent company performance. Large Corporates closely track customer ratings such as Net Promotor Score (NPS) because they are proven indicators of future financial performance.

In this paper, Cemplicity turns their attention to healthcare and explores the link between patient experience ratings and hospital operating margins.

1. ***Would the same link between experience ratings and financial performance exist in healthcare as in other sectors?***

2. ***Do findings from earlier studies, that suggested a correlation between patient ratings and financial performance, still hold true?***

Key Findings

There is a statistically significant, positive correlation between a hospital's patient experience score and its operating margin.

Our analysis is based on data from almost 3000 hospitals making the findings robust. It suggests that patient experience ratings are a leading indicator that could signal financial stressors before they manifest, highlighting the importance of actively tracking these metrics.

Not only does our analysis show correlation between experiences and margins, it also highlights key touchpoints in the patient journey that have an outsized impact on both a patient's experience and their clinical outcomes.

Understanding what drives the patients' experiences (both operationally and what matters most to patients) can better inform decision making and efficient resource allocation, leading to better outcomes for patients and other stakeholders.

1. The trend between patient experience scores for hospitals and operating margins shown in historic studies is still valid today.
2. You should target having at least 80% of patients providing a top experience score to maximise the operating margin benefit. When more patients than this gave a top experience the associated increase in operating margin was not statistically significant.
3. The most important factors that influence the overall patient experience from the patient feedback data cover key touchpoints of the patient journey:
    - at the start with joint decision making;
    - during care with the overall care transition score;
    - all aspects of interaction with nurses; and
    - post discharge (the patient understood their care when they left the hospital).

These factors have also been associated with improved outcomes in peer-reviewed research.

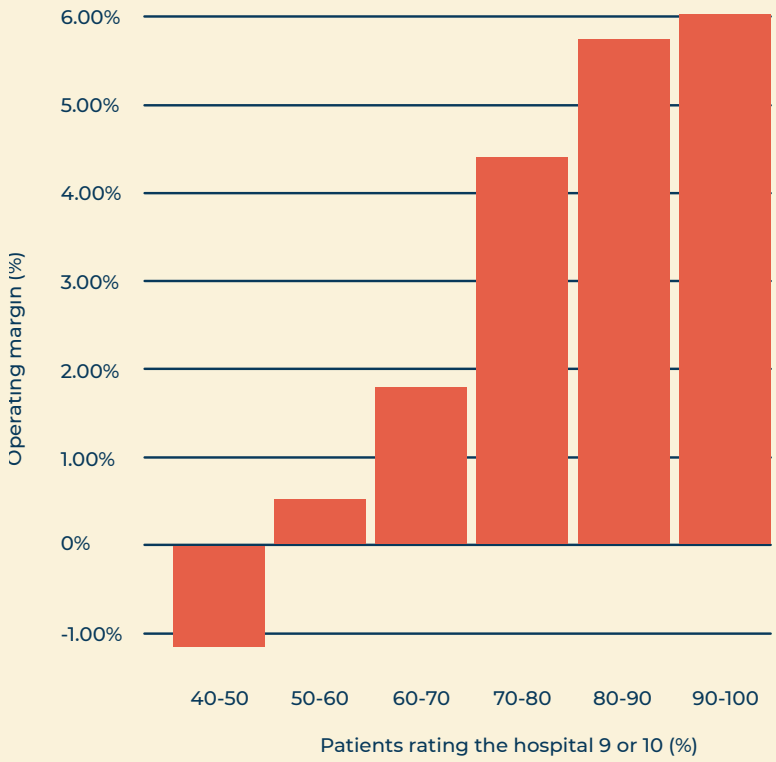

Figure 1. *Operating margin from patient services vs percentage of patients that gave a 9 or 10 out of 10 rating (2022/2023 reporting period).*

Background

Across many sectors there is growing awareness of the link between customer experience and financial performance. This link for healthcare was highlighted in 2015 with an Accenture white paper, followed up in 2016 with a more detailed analysis by Deloitte. Both studies used historic data from the US Center for Medicare and Medicaid Services (2012 and 2013 for Accenture, 2008 to 2014 for Deloitte) and showed a positive correlation between the percent of patients rating a hospital 9 or 10 out of 10, and profitability.

Since then, there have been many articles, blog posts and presentations highlighting the importance of patient experience on profitability in health care. Almost all of them, even those published in 2024, reference one or the other of these reports.

There have been many changes in health care and society as a whole in the decade since those reports were published, not to mention the disruptions caused by the COVID-19 pandemic.

We couldn't help wondering if those powerful insights, unearthed from now historic data, were still valid today.

We decided to investigate.

How do historic trends hold up with current data?

For this work we used US hospital data. The US has a mature private health care sector and regulatory reporting requirements mean there is a large, publicly accessible dataset of patient feedback, operational and financial data aggregated at hospital level available.

We looked at data[1] for the 2022/2023 reporting period from 2,946[2] non-government owned hospitals (for profit and not for profit). We compared operating margin from patient services to the percentage of patients that gave the hospital an overall rating of 9 or 10 out of 10, the highest score possible in the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS[3]) surveys:

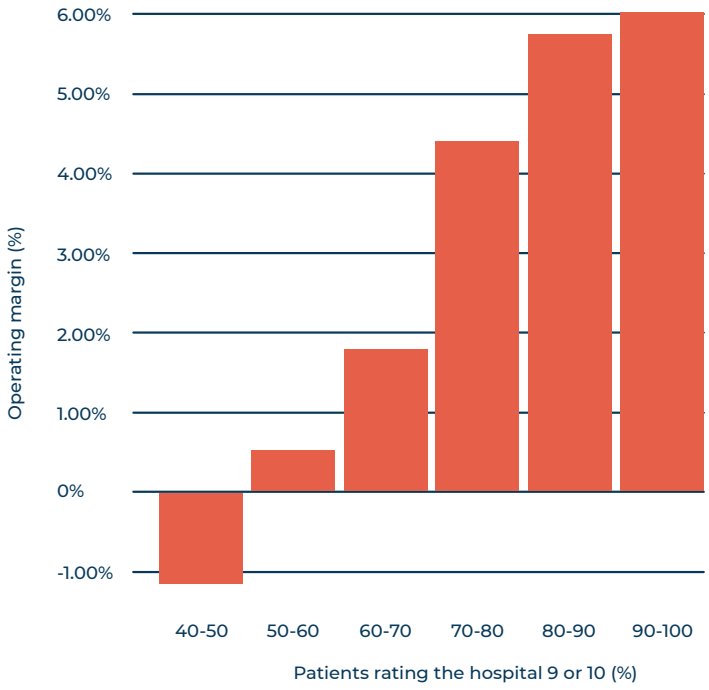

Figure 1. *Operating margin from patient services vs percentage of patients that gave a 9 or 10 out of 10 rating (2022/2023 reporting period).*

There is a clear trend – overall, hospitals that achieve the highest score from more patients tend to show better financial performance. More than that, linear regression modelling showed that the positive correlation between operating margin and patient experience was statistically significant.

As we know, there are many factors that affect both the patient experience and financial performance of a hospital. We decided to explore if the overall trend is valid across different hospital types.

We used linear mixed effects modelling (LME)[4] to see whether different hospital characteristics made a difference to the correlation between operating margins and patient score.

Figure 2 shows the average operating margin increase per 10% increase in HCAHPS score for each hospital type. The LME told us that even controlling for these categories, and the variation associated with the US State that the hospital was in, the positive correlation between operating margin and patient experience is still significant.

Category	Hospital Type	Operating margin increase
Ownership	For profit	1.31%
	Non-profit	2.18%
Academic	Academic	1.48%
	Non academic	1.48%
Geography	Metropolitan	1.50%
	Urban	2.85%
	Rural	2.85%
System	Chain	1.84%
	Stand alone	1.22%

Figure 2. *Average increase in operating margin per 10% increase in HCAHPS score across different hospital categories.*

Conclusions

The trends found in historic hospital data reported by Accenture and Deloitte, are still valid today: hospital financial performance is positively correlated with the patient experience.

How can this help our hospitals?

Our analysis supports the active tracking of patient experiences. If you start to see declines in hospital or service patient ratings, it is a signal that financial challenges may be ahead. Like other sectors, these patient experience ratings can be a leading indicator rather than a lagging indicator i.e. waiting until the financial pressure comes on to know you have a problem.

Having validated the earlier studies and with our heads deep in the data, we decided to go further to see what other useful insights we could surface. After all, healthcare is one of the most demanding 'business to consumer' (B2C) industries and there are complex interactions between patient experience, clinical outcomes and profit.

What else could we learn that would help our clients with their quality improvement?

What is a good patient experience score?

Firstly, we looked to see if this data showed a threshold value for patient experience i.e. a top level after which improvements in score made little difference. We tested the difference in average operating margin between consecutive groups of similarly rated hospitals (figure 1) for significance, in descending order.

There was no statistically significant difference between those hospitals where 80% to 90% of patients gave a top score, and those where 90% to 100% of patients gave a top score ($p = 0.81$). There was a statistically significant difference between hospitals getting 70% to 80% and those getting 80% to 90% ($p = 0.05$).

From an operating margin perspective, the target for private hospitals should be to achieve and maintain a top score of 80%. Above 80% shows little extra impact in operating margin.

Although we aren't looking at net promoter scores (NPS) in this data, many of our clients use this as their primary patient experience rating. The 80% threshold tracks with the target value for NPS suggested by Bain & Company.

Can operational measures tell us anything?

The breakdown by hospital type is interesting but perhaps too unique to the US context to be useful to other countries. We wanted to see if a few key operational measures, applicable to hospitals in general, had any impact on margins and patient experience. We started with occupancy, discharge equivalents, and employees per staffed bed day.

	Operating margin			Percent patients giving top score		
Model	r^2	β	p-value	r^2	β	p-value
Occupancy	0.3%	0.03	0.001	9.1%	-0.13	< 0.001
Discharge equivalents	0.3%	< 0.01	0.003	8.8%	< 0.01	< 0.001
Employees per bed day	0.9%	-61.80	< 0.001	14.2%	206.24	< 0.001

Figure 3. *Outputs from linear regression models where operating margin and percent of patients giving a top score were fit against occupancy, discharge equivalents and employees per staffed bed day respectively.*

The table shows outputs from several linear regression models to assess whether the operational measures are correlated with operating margin or patient experience (p-value)[5], if a correlation exists, how strong it is (r^2)[6], and the size and direction of the correlation (β)[7].

We consider the strength and size of the effect together to assess how much weight to place on the correlation for pragmatic decision making.

The results show that the correlations between occupancy, discharge equivalents and employees per staffed bed day between both operating margin and patient score are significant (p-value is less than 0.05).

From the data, we can see that increasing occupancy has a very small positive impact on operating margin (r^2 = 0.3%, β = 0.03) but a larger negative impact on patient score (r^2 = 9.1%, β = -0.132).

Employees per staffed bed day is far more interesting.

We can see that for patient scores this is a stronger correlation with a huge effect size (r^2 = 14.2%, β = 206.24). It does have a negative correlation to operating margin, but the correlation is very weak (r^2 = 0.9%, β = -61.80).

It will come as no surprise that the data clearly supports that staff resourcing has a far larger positive impact on the patient experience than it negatively impacts on the bottom line. Adequate resourcing can easily compensate for the negative impact of high occupancy on patient experience.

(not a) Key Driver Analysis

By the time a patient provides their overall experience rating, they have experienced many facets of care. Their rating is therefore a reflection of many factors from the operational aspects of a hospital to how the patient found interactions with staff, the environment of the hospital and aspects of their clinical care to name just a few.

Decision makers typically rely on key driver analysis (KDA) to identify which aspects are the most important to patients, allowing them to make data-driven decisions on where to focus resources for improvements.

We couldn't run a proper key driver analysis with this dataset because the data are aggregated to hospital level, but we did assess the correlation between 27 different measures reported in the HCAHPS data against the overall patient score. (The 27 different measures are shown at the end of this paper for interest.)

The top four most important aspects based on strength of correlation, effect size and significance were:

Aspect of care	r^2	β	p-value
Hospital care transition score[8]	77.8%	2.567	< 0.001
Joint decision making[9]	72.1%	1.073	< 0.001
Patient understood their care when they left hospital	70.9%	1.140	< 0.001
Nurses always communicated well	70.3%	1.317	< 0.001

The four measures above reflect four key touch points in the patient journey, at the start with joint decision making, during their care (nurse communication) and at discharge (care transition) and post-discharge (patients understood their care when they left).

In total there were four questions asking about aspects of interaction with nurses, the other three aspects (nurses listened carefully, nurses treated patient with respect and dignity, and nurses explained things in a way the patient understood) were the next most important factors for overall patient score after the top four shown above. Communication with doctors was less important than communication with nurses (r^2 = 57.2%, β = 1.234).

Healthcare research tells us that joint decision making[10], and nurse engagement[11] are key factors in good clinical outcomes. Good discharge and post-discharge processes can also lead to improved outcomes but crucially, can reduce unplanned readmissions[12] which has a direct financial impact for private hospitals.

Reflections

Measuring and tracking patient experiences provides a useful metric for private healthcare providers. Many industries have seen a clear relationship between their customer experience and brand loyalty and profits. The data we looked at shows the same is true for healthcare.

Where patients have options, maintaining a high quality of patient experience is even more important – in a world with paid-for online reviews, real word of mouth recommendations matter more than ever.

Tracking top level patient feedback scores is also important as it not only gives you an early signal of quality or safety issues, it can be a signal of emerging financial pressure.

Our analysis in this paper reflects the trends seen across almost 3,000 hospitals. This makes the findings robust. And, what always amazes us is the alignment in evidence showing that certain key touch points of the patient journey can have an outsized impact on both the patient experience and clinical outcomes.

While some people might dismiss patient feedback as 'subjective', rigorous academic findings and patient-reported ratings are aligned and consistent when it comes to the importance of these touchpoints.

1. Partnering with patients in decision-making, to ensure their needs are met.
2. Clear, effective communication between nurses and patients, treating people with respect and dignity.
3. A good discharge process.
4. Ensuring patients know how to care for themselves when they get home.

At Cemplicity, we acknowledge that every hospital has its own unique features and variation in what their patients find important. In the coming months we will be rolling out our real-time KDA tools to ensure the analysis we have undertaken with this public data can be provided seamlessly for individual hospitals using their own patient feedback.

However, there won't be many big surprises.

About This Article

This article is the first of a series of more technical investigations of patient feedback data. We are applying a statistical lens to the data we have collected for our Cemplicity community to see what insights are waiting to be found.

Future articles will be focused on specific topics. Alongside this analysis we will also be working with our client community to encourage collaboration and shared learning when local strategies are showing positive impact on patient experiences of care.

References:

1. Patient experience data downloaded from the Centers for Medicare and Medicaid Services, hospital performance data obtained from RAND (hospitaldatasets.org).
2. Hospitals with less than 40% of patients scoring the hospital 9 or 10 were excluded, outliers for operating margin were excluded by the IQR method.
3. HCAHPS is a government mandated patient experience survey for healthcare providers in the USA. The “recommend” question is not formulated in way to make calculating NPS possible. % patients scoring 9 or 10 is used here as a proxy for overall quality patient experience.
4. Linear mixed effect modelling is a more complex form of regression modelling that allows us to assess a correlation while taking into account other variables that we think may influence this correlation.
5. p is the probability that the observation, in this case the correlation, is due to random chance. It is generally accepted that a value of less than 0.05 indicates it is not due to chance, thus a real effect.
6. r^2 tells us the % variation in the outcome of interest that is explained by the model.
7. β tells us how the variable being assessed effects the outcome of interest, a value of 1 means that for 1 unit increase in the variable, the outcome will also increase by one. A value of -1 means for every increase of 1 unit the outcome will decrease by 1 unit.
8. An HCAHPS metric which combines all aspects of care transition.
9. “Staff took patients preferences into account when determining health care needs”.
10. Tasha M. Hughes, Katiuscha Merath, et al. Association of shared decision-making on patient reported health outcomes and health utilization. The American Journal of Surgery, Volume 216, Issue 1,2018.
11. Christina Dempsey, Barabara Reilly, Nell Buhlman. Improving the Patient Experience. The Journal of Nursing Administration, 44(3), March 2014.
12. Eric Alper, Terrence A O’Malley, Jeffrey Greenwald. Hospital discharge and readmission. Medilib online journal, February 2023.

Appendix

HCAHPS reported aspects of care correlation scores to the overall patient score.

Aspect of care	r^2	β	p-value
Hospital care transition score	77.8%	2.567	< 0.001
Staff took patient's preference into account to determine health care needs	72.1%	1.073	< 0.001
Patient understood their care when they left hospital	70.9%	1.14	< 0.001
Nurses always communicated well	70.3%	1.317	< 0.001
Nurses always listened carefully	67.9%	1.149	< 0.001
Nurses always treated patient with respect	66.6%	1.425	< 0.001
Nurses always explained things well	64.4%	1.224	< 0.001
Patient understood their responsibilities in managing their health	63.0%	1.073	< 0.001
Patient understood their medications on discharge	63.0%	1.073	< 0.001
Doctors always communicated well	57.2%	1.234	< 0.001
Doctors always listened carefully	56.8%	1.138	< 0.001
Patient always received help as soon as they wanted	56.1%	0.691	< 0.001
Staff always explained about medicines given	55.9%	0.969	< 0.001
Staff always explained what new medicines were for	55.2%	1.095	< 0.001
Doctors always treated patient with respect	55.0%	1.431	< 0.001
Patient always received call button help as soon as they wanted	54.1%	0.631	< 0.001
Patients always received bathroom help as soon as they wanted	54.1%	0.746	< 0.001
Doctors always explained things well	52.2%	1.075	< 0.001
Staff always explained possible side effects	50.0%	0.827	< 0.001
Hospital Discharge information score	49.5%	1.569	< 0.001
Hospital quietness score	48.9%	1.14	< 0.001
Patient's room was always clean	44.6%	0.737	< 0.001
Area around patient's room was always quiet at night	44.1%	0.601	< 0.001
Hospital cleanliness score	41.3%	1.25	< 0.001
Staff gave patient info about what to do during recovery at home	40.7%	1.414	< 0.001
Staff gave patient info about symptoms to look out for	38.9%	1.46	< 0.001
Staff gave patient info about help after discharge	35.1%	1.095	< 0.001

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